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ISSUE
INSIDE!**

DigitalWorld

FROM THE EDITORS OF **PCWORLD**

(SEE BACK)



PCWORLD

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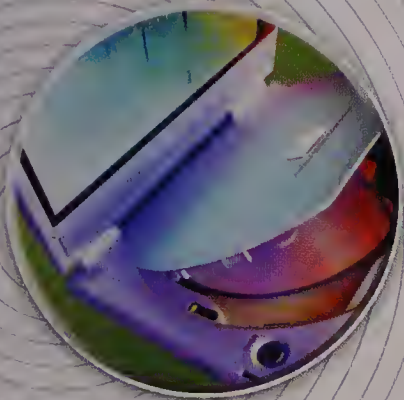
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TECHNOLOGY THAT POWERS YOUR LIFE

ONE-STOP GUIDE TO DVD, GREAT ELECTRONIC GIFTS,
HOME THEATER HOW-TO



Digital World is a new publication devoted to covering the convergence of PCs, consumer electronics, and mobile communications gadgets. *Digital World* will help you choose the best gear and buy products with confidence, based on authoritative, approachable, and entertaining articles.

CURRENT ISSUE

BONUS WITH THIS ISSUE OF PC WORLD

FEATURES/REVIEWS

- One-Stop Guide to DVD
- Great Digital Gifts
- Best Home Theater Setups
- Personal Robots—At Your Service

COLUMNS

- Descrambler: A Wi-Fi House That Works
- Tech at Home: Cutting-Edge Audio Discs
- Gear to Go: Great iPod Accessories
- Skeptical Shopper: Many Happy Returns

UPCOMING ISSUE

FEBRUARY 2005

BONUS ISSUE WITH THE FEBRUARY 2005
ISSUE OF PC WORLD
ON SALE JANUARY 18, 2005

- LCD TVs
- Digital World Innovation Awards
- Gaming With the Pros
- The Hottest Gadgets



How to Stop the Latest **IDENTITY THEFT SCAMS**

BONUS
COVER FOLD-OUT
Smart PC Shopping Tips

PCWORLD



FUN TO GO: iPod
Rivals & Video Handhelds
Cheapskate's Guide to **HDTV**

PHOTO PERFECT:
TOP EDITING SOFTWARE,
PLUS ADVANCED CAMERAS



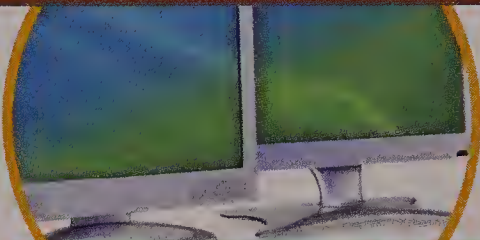
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Amazing PCs



Smarter Phones



Super Flat Screens



Do-Everything DVD...and More

GREAT STUFF!

WHAT'S **NEW** AND
WHAT'S **NEXT** FOR

2005

\$6.99 USA ♦ \$7.99 CANADA ♦ Printed in USA



DISPLAY UNTIL DECEMBER 13, 2004

GET AT LEAST A 40GB HARD DRIVE

- ✓ Music and video files can consume a lot of storage space, so a larger hard drive is always better.

LOOK FOR BUILT-IN WIRELESS

- ✓ Having the wireless capability built in helps you avoid the hassle

of using a wireless PC card anytime you want to hook up to the Internet.

BUY A SECOND BATTERY

- ✓ If you travel often with your notebook, or if you like working away from an outlet, another battery is handy. Some batteries last for up to 8 hours.

Shop for the Perfect Printer

HOW MANY INKS?

- ✓ So-called photo printers have extra inks, but some all-purpose models with fewer inks print attractive photos, too.

LOOK FOR MEDIA CARD SLOTS

- ✓ Make sure the printer's memory card reader supports the format your camera uses—not every printer supports all the popular formats.

PLUG IN YOUR CAMERA AND PRINT

- ✓ If your camera supports Pict-Bridge, get a printer that does,

too. That way, you won't need a PC for printing; a USB cable will suffice.

CONTROL INK COSTS

- ✓ Buying a printer with large ink tanks should keep your ink costs down, though the ink will cost you more up front. For example, the HP Business Inkjet 2300 prints color pages at a low 7.7 cents each, but a set of ink cartridges for this model will set you back \$136.

UNDERSTAND TRUE PRINT SPEED

- ✓ Vendors tend to exaggerate these specs wildly. Most inkjets print text at less than 6 pages per minute and color graphics at less than 2 ppm.

Shop for the Perfect Monitor

GET INPUTS THAT SPEAK TO YOUR PC

- ✓ If your PC's graphics adapter has a DVI port, buy a monitor that accepts DVI input. A digital (DVI) connection often gives a sharper image than an analog (VGA) one does. To keep your bases covered, find a monitor with both analog and digital ports.

LOOK FOR A LIMBER MODEL

- ✓ Buy a height-adjustable monitor, and save your dictionary for reading. A screen that rotates from side to side is easier to share with others, and one that pivots from landscape to portrait mode can save you scrolling.

GO FOR THE BIG ONE

- ✓ Bigger screens mean higher resolutions—and handsomer images. Wide-screen models are great for handling spreadsheets, and their aspect ratio is right for movie watching. A 17-inch wide-screen has less screen real

estate than a standard-size 17-incher, so get a size larger wide-screen.

CONSIDER RESPONSE TIME

- ✓ A faster response time means smoother movements in video and during scrolling, and 16 ms is comfortable for most applications. If you're doing bread-and-butter word processing, 25 ms will suffice. Gamers and DVD enthusiasts will want the fastest response time possible: 12 ms in an LCD (or stick with a CRT).

CHECK THE PIXEL POLICY

- ✓ A single dead pixel can ruin the screen for a user, but some vendors accept monitor returns only if the dead pixels are of a certain color, at a certain place on the screen, or of a certain number. Find out what returns the manufacturer and reseller will honor.

TIPS

Before You Buy...

READ THE RETURN POLICY

Check the money-back guarantee period, and see whether you can return an item bought online to one of the company's brick-and-mortar outlets. Are returns for cash or for credit? Does it matter if the box is already opened? Is there a restocking fee (usually between 10 and 20 percent of the sale price)?

ASK FOR A WRITTEN WARRANTY

Before closing the deal, understand the length of the standard warranty and the exact repairs it covers. What's involved in making a claim? Is there a time limit? Is on-site service an option? How long will your product be out of commission?

STUDY THE REBATE FINE PRINT

Some rebate offers expire faster than a carton of yogurt. Check the date when the promotion period ends. Fill out the forms completely. File the rebate claim promptly—some stores give you only 14 days to file a form.

STAY SECURE ONLINE

Sites using SSL or SET technology are safe. To confirm that a site uses one of these, look for an unbroken key or padlock icon in your browser when you load the vendor's Web page. Or check for the string *https://* at the beginning of the Web address.

USE A CREDIT CARD

The Fair Credit Billing Act protects credit card transactions, letting you stop payment temporarily if you suspect someone stole your card number. ATM cards lack this protection.

For additional tips, visit find.pcworld.com/45140.



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PCWORLD

Instant Reference Guide Shopping Checklist

Before you hit the stores or the sites, make sure you get the tech gear that'll keep you up to date.

Shop for the Perfect PC



needs of most people, but tasks like television recording and video editing gobble up space quickly. Fortunately, nearly all systems set aside room for adding another hard drive if you find that you need more storage later.

LOOK FOR INTEGRATION

- ✓ PCs that include integrated networking, USB, and FireWire ports often have more PCI slots available for other upgrades.

GET A DVD-REWRITABLE DRIVE

- ✓ These drives have become remarkably inexpensive—and they write CD-RWs, too. Today's fastest models write to write-once media at 16X speed.

SEARCH FOR ACCESSIBLE SLOTS

- ✓ Special slots for flash memory are nice—assuming you can reach them. If they're near the bottom of the case, they'll be hard to reach if you plan to keep the computer on the floor.

BUY A SYSTEM, NOT A PROCESSOR

- ✓ Any processor can handle Web browsing and e-mail, so spend your money on other parts first. For example, a PC that has a speedy processor and a small hard drive gives you only half of what you need for video editing.

GET AT LEAST 512MB OF RAM

- ✓ For Windows XP, 512MB will help your system work properly. But watch out for systems that fill their slots with two 256MB modules instead of using a single 512MB module. You'll pay less for the dual 256MB modules, but if you upgrade later on, you may have to throw away memory.

INVEST IN THE HARD DRIVE

- ✓ Almost any hard drive should have plenty of space to handle the

Shop for the Perfect Notebook

GET AT LEAST 256MB OF RAM

- ✓ More memory lets your notebook run more applications at once. Many notebooks now include 512MB.

CONSIDER A 14.1-INCH SCREEN

- ✓ That size is easy on the eyes, and it also ensures that your notebook won't be so big and heavy that you hesitate to take it on road trips.

LOOK FOR A MULTIPURPOSE BAY

- ✓ A multipurpose bay will give you more options for swapping in a different optical drive or an extra hard drive, if you need it.

PICK THE OPTICAL DRIVE CAREFULLY

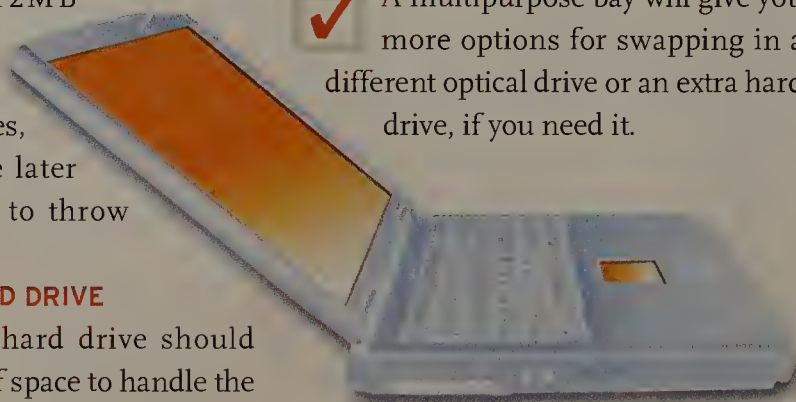
- ✓ If you're planning just to back up your data and burn MP3s, a CD-RW drive should suffice. But for a little extra money, you can get a notebook with a DVD burner—a handy addition.

TRY THE KEYBOARD BEFORE YOU BUY

- ✓ Some keyboards feel cramped; the keys on others are arranged in a different manner or are a different size than you're accustomed to. Do some test typing to ensure that you'll be comfortable using it regularly.

CONSIDER THE POINTING DEVICE

- ✓ Not all models have both a pointing stick and a touchpad; look for models that have the device you prefer.



Continued on the other side.

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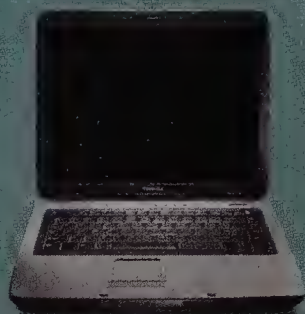


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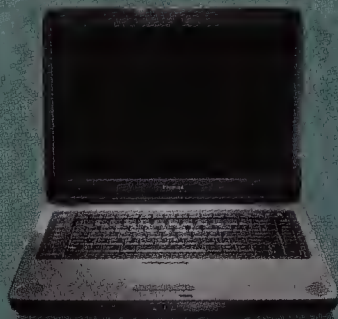
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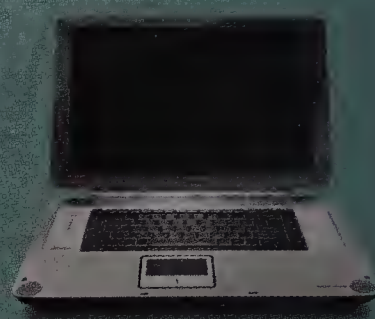
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DVD-ROM/CD-RW or DVD SuperMulti optical drive
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Limited warranty:⁵ 1-year parts and labor,
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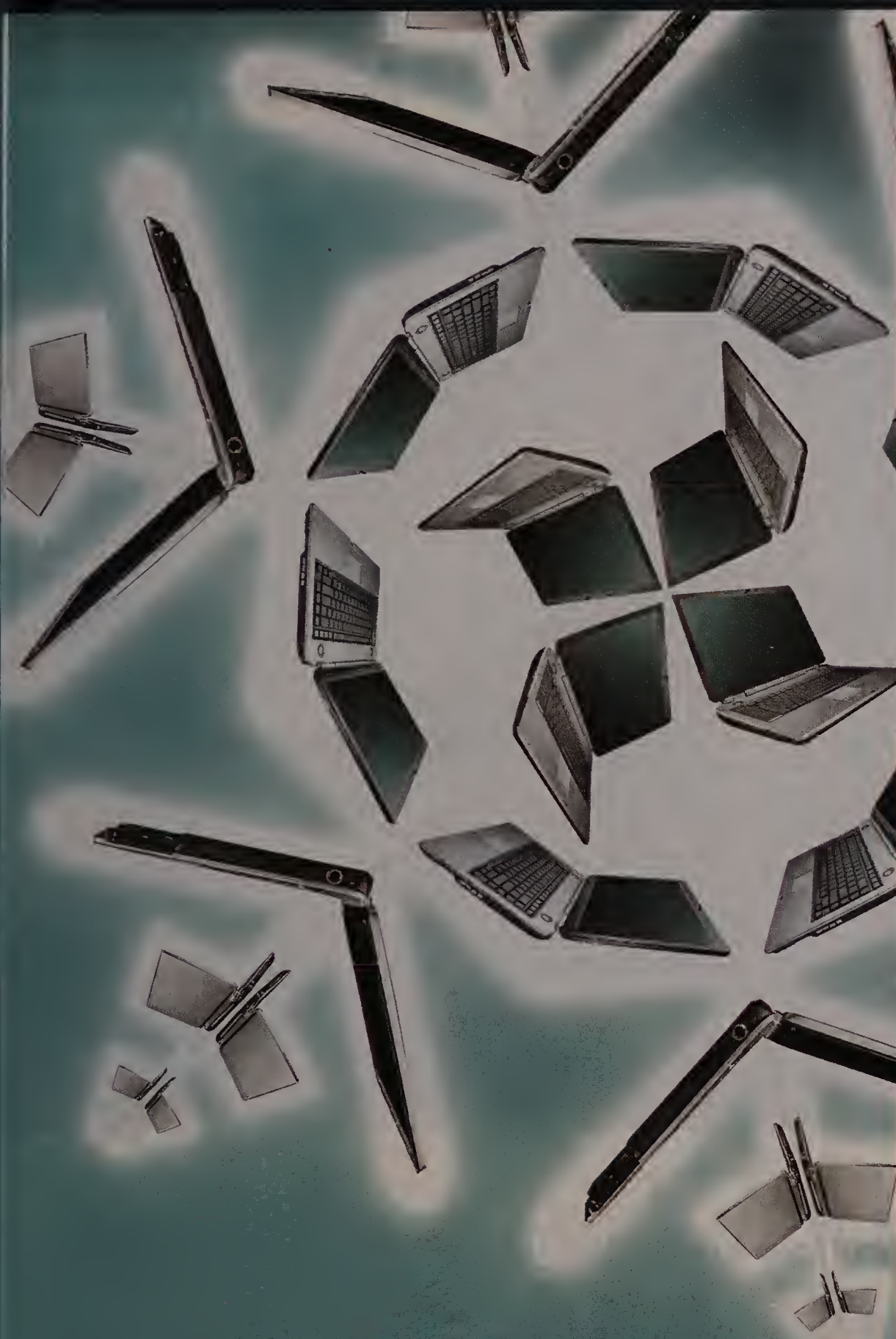
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OptomaHDTV



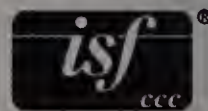
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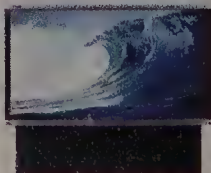
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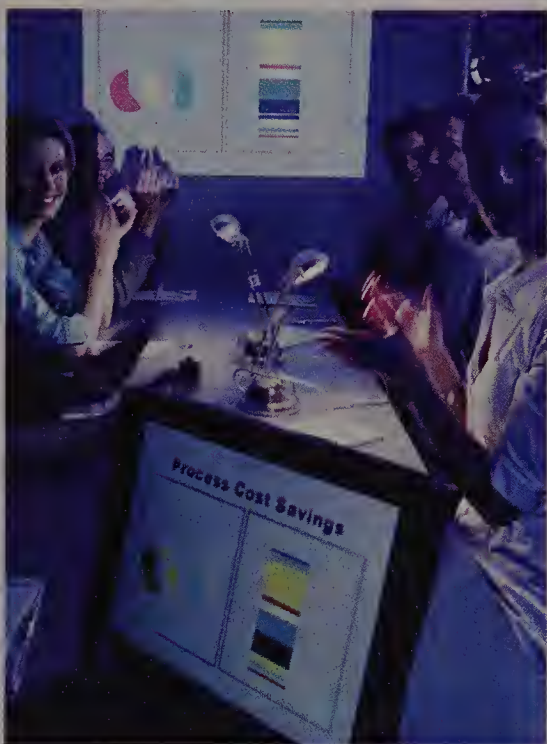


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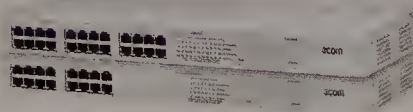
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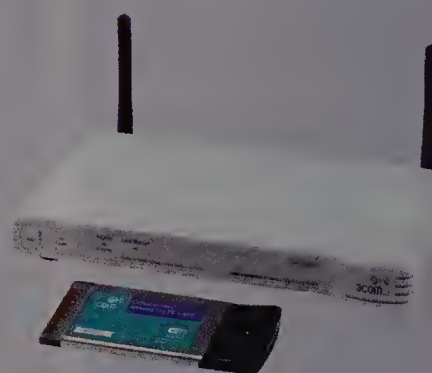


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Tech 2005



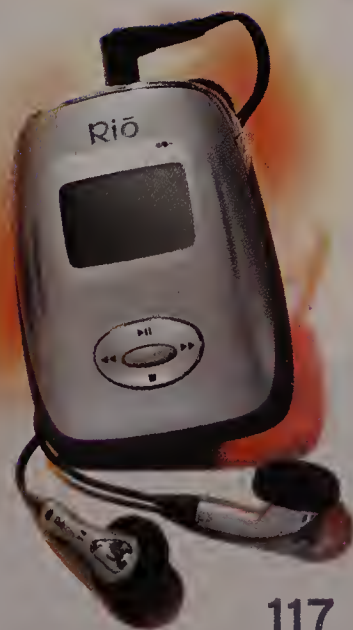
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FUTURE PC

74 Tech 2005: What's New and What's Next

The products appearing on the horizon promise to be speedier, tinier, cheaper—and brainier. Displays will offer even-more-dazzling color, PCs will consist of pluggable, Lego-like modules; homes will get unwired and automated; cell phones will work on planes; and cars will have Wi-Fi, digital maps, and directories.

Cover photography by Kevin Candland



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PCWORLD

DECEMBER 2004

VOLUME 22 ♦ NUMBER 12

AOL KEYWORD: PCWORLD

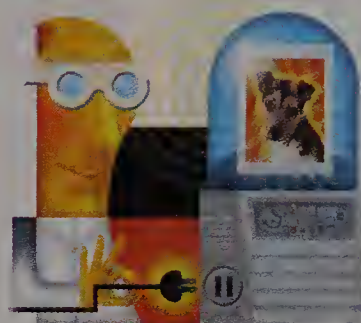
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FEATURES

DIGITAL PHOTOS

86 Do More With Digital Photos

You don't just snap pictures anymore—you edit them. We examine four major packages and almost two dozen specialized tools to find the ones that will help you get the most out of your digital photography.



IDENTITY THEFT

107 Protect Your Identity

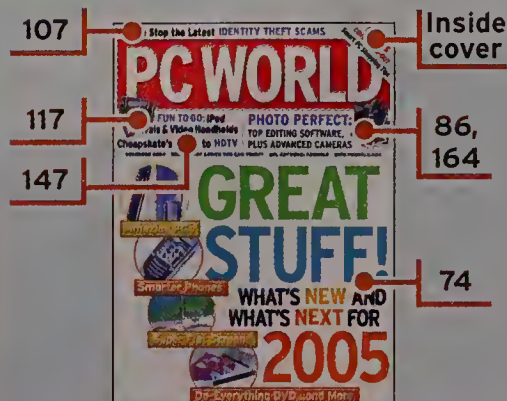
Your name, your money, your reputation—thieves can get them all, whether they hook you in a phishing scam or steal records from a company you trust. Learn how to stay safe, and how to recover if you are victimized.

MEDIA HANDHELDS

117 Entertainment to Go

Digital music players keep improving, and now the Windows Portable Media Center OS brings portable video players into the picture. We review 20 handsome handhelds.

ON THE COVER





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TOP 100

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Consumer SLRs and 8-megapixel models.
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- 172 Top 15 Notebook PCs**
- 177 Top 10 Inkjet Printers**
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TELL US WHAT YOU THINK

Visit www.pcworld.com/pcwininput and rate this issue—you could win a PalmOne Tungsten C personal digital assistant, which currently sells for approximately \$399. You'll need the subscriber number from your mailing label to take this survey online. The site explains the official rules and also how to participate in the drawing if you're not a subscriber. You can enter from November 13 through December 10, 2004.

COMING UP IN JANUARY

5-Minute Fixes: We offer quick and simple tips for fixing lots of everyday PC-related problems.
PCs Get Fun: Media Center PCs handle gaming, TV, music, and video. We look at eight models.

Reliability & Service Survey: Readers rate the makers of PCs, cameras, audio players, and more.
Graphics Card Roundup: Which technology is better for you—AGP or PCI Express? Read our results.

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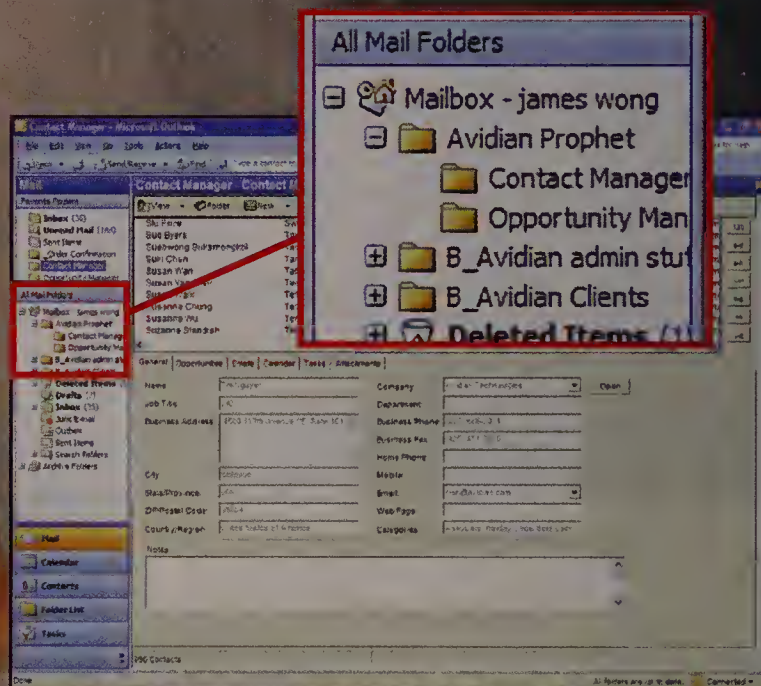
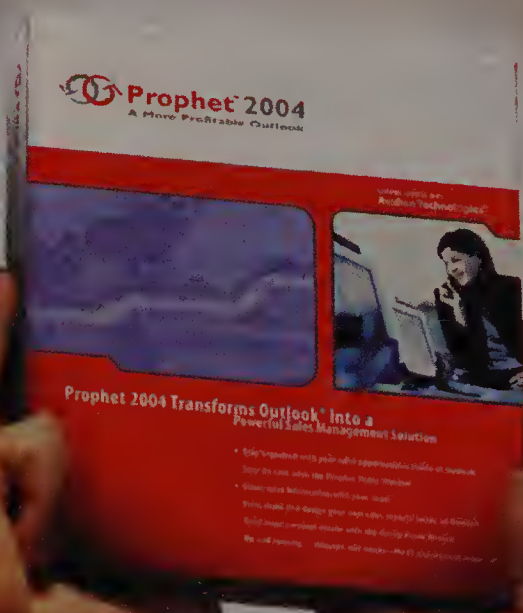
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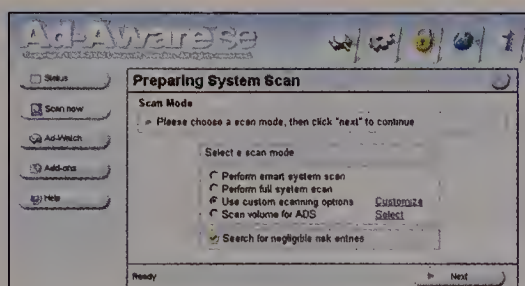
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*AIME E-DOC Magazine, March, 2004.

Capable Cameras, a Spyware Eliminator, and Video for the Road

ADMIRABLE PRODUCTS emerge on many fronts in this issue, from high-end digital cameras in our *Top 100* Spotlight to enticing hardware and software in *New Products* to audio and video players in our

"Entertainment to Go" review. Also up for close inspection this month: digital photo editing software in our "Do More With Digital Photos" feature, and high-definition TVs for different budgets in *Next Gear*.



164 Advanced Digital Cameras

The Nikon D70 is one of three new cameras to receive high marks in our Spotlight on SLR and advanced point-and-shoot models this month.

62 Even Better Anti-Spyware Utility

Lavasoft improves on its excellent (and free) Ad-Aware SE program by introducing real-time protection in the \$27 version, Ad-Aware SE Plus.

119 Handheld Video Players

New devices such as Creative's Zen Portable Media Center incorporate Microsoft's mobile operating system for video you can take with you.

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THE HIGHEST-RANKING new products reviewed in this issue of *PC World* are listed above, together with the page number where

each product is reviewed and the star rating it received. See find.pcworld.com/10860 for more about *PC World's* Star Ratings.



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ONLINE FEATURES



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find.pcworld.com/45124

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Handheld Runs Windows XP

find.pcworld.com/45126

Who wouldn't want a full-featured PC the size of a PDA? That's the promise of OQO's widely anticipated Model 01 Ultra Personal Computer.

FEATURED COLUMN



Digital Gear

find.pcworld.com/45128

Agam Shah offers the gearhead's guide to gadgets for use on the go or at home. He gives you the heads-up on the latest products, good and bad.

E-MAIL NEWSLETTERS

Weekly Brief

Best stories of the week.

Daily Product Review

Expert reviews, sneak previews.

Steve Bass's Home Office

Get the most from technology.

Best Buys

Award winners from our *Top 100*.

Daily Downloads

The hottest software on the Web: games, utilities, drivers, and more.

Visit find.pcworld.com/37577 for these newsletters and more.

Visit find.pcworld.com/39908 for regular *PC World* columns.

PRODUCT FINDER

How it works: Powerful search tools find the products you want.

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Merchants: Hundreds of retailers, with ratings from customers.

Services: Simplified order tracking and shipping calculations for all of your online purchases.

Go to find.pcworld.com/37580 for all Product Finder listings.

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HIGHLIGHTS

New Home Page Section

www.pcworld.com

Our "More Highlights" area on the PCWorld.com home page is a handy guide to many of our hottest services, special features, and tools. You can find and access some of the most interesting parts of the site via these convenient new listings.

MORE HIGHLIGHTS

Today @ PC World Blog

PCW staffers blog the hottest products and trends.

Techlog by the Editor in Chief

News, opinion, and links from Editor in Chief Harry McCracken.

Spyware Help Center

Tips, tools, and news in the fight against spyware and adware.

Spam Watch

Voice Over IP Ce

The latest on Net ph reviews and news.

Bargain Finder

Daily deals and barg products.

HotSpot Finder

Find Wi-Fi hot spots and the world.

RSS Feeds

TOP 10 DOWNLOADS

Head to find.pcworld.com/44860 to locate and download these popular files.

1. Ad-Aware SE 1.05
2. Spybot Search & Destroy 1.3
3. ZoneAlarm 5.0.590.015
4. Norton AntiVirus 2005
5. WinPatrol 8.0
6. CWS shredder 1.59.1
7. Process Explorer 8.41
8. Adobe Reader SpeedUp 1.29
9. PureText 2.0
10. GNU Image Manipulation Program (GIMP)

MOST POPULAR PRODUCTS

At press time, these were the top sellers, by category, at *PC World's* Product Finder.

- **Digital Camera**
Sony Cyber-shot DSC-W1
find.pcworld.com/45134
- **Flash Memory**
Lexar 1GB SD Card
find.pcworld.com/45130
- **Database Software**
FileMaker Pro 7
find.pcworld.com/45136
- **Digital Projector**
BenQ PB6200
find.pcworld.com/45132
- **LCD Monitor**
Princeton LCD19D
find.pcworld.com/45138



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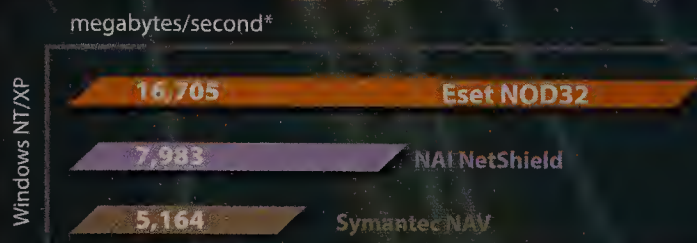
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UP FRONT

HARRY MCCrackEN

What Happened to the Next Big Things?

We have seen the future...but imperfectly. An update on yesterday's future tech.

"WHAT NEXT?" WITH PERSONAL TECHNOLOGY, it's an inevitable question, and the answer's never the same twice. We at *PC World* do our darnedest to address it early and often. Case in point: This issue's "Tech 2005: What's New and What's Next" (page 74), the latest of our more-or-less

annual sneak peeks at the road ahead for PCs and related products.

In the past, we've spotlighted a bevy of breakthroughs that soon became everyday tools, from flat screens to Wi-Fi networks. But predicting the future is never an exact science. For one thing, potentially great stuff often shows up glitchy or late—or both—when it shows up at all. For another, vendors have a spotty record when it comes to figuring out what pesky real people will find truly useful.

So it's worth doing the occasional reality check on technologies we've written about in past new-tech previews. Like, for instance, the following.

Pint-size removable storage: Back in January, we previewed Iomega's DCT, which crammed 1.5GB of storage into \$10 microdiscs for use in portable products such as MP3 players. Then Iomega decided not to bring DCT to market. Meanwhile, DataPlay, a DCT-like disc that was moribund last year, is back for another try (www.pcworld.com/44964). But with memory cards such as SD still growing in capacity and shrinking in price, I suspect that the future of small storage will be solid state.

Lilliputian Windows XP machines: Speaking of small, "ultraportable PCs"—paperback-size machines that weigh around a pound—have been stuck in vaporware mode, until now. See page 61 for our hands-on report on the OQO, which we first wrote



about in 2002. Sony's VAIO U series, a cult favorite in Japan, is also due here shortly. But the FlipStart and Tiqit devices are still vaporous as of this writing.

Voice recognition: Back in the late 1990s, voice recognition was supposed to change everything. Instead, it's changed...well, hardly anything. (Word now lets you dictate—know anyone who bothers?) True, Scansoft's Dragon NaturallySpeaking software remains a lifesaver for folks who

can't or shouldn't use a keyboard. However,

as with handwriting recognition, it seems that voice input won't matter for most of us until it gets close to perfect.

Bluetooth: After years of overpromising and underdelivering, this personal networking technology is finally the real deal. Sort of. I wouldn't buy a cell phone that didn't have it. But in the PC domain, its biggest accomplishment has been to make wireless keyboards and mice pricier and flakier. And now Ultra Wideband (UWB), a standard for wire-free communications, is gunning to kill off Bluetooth on the desktop. Shouldn't be too hard.

Organic LED displays: Super thin, energy efficient, vibrantly colorful—once you've seen an OLED, today's flat-screen technologies start to look passé. So far, however, the most intriguing OLED-equipped gadgets—such as Kodak's camera and Sony's drool-worthy new Clié PDA—haven't been made available in the U.S. Still, I bet we'll see OLED phones and audio players in 2005.

Which new technologies are you dying to get your hands on? Let us know at mageditor@pcworld.com. Like I said, PC users like you ultimately decide which breakthroughs really *are* breakthroughs—so we'd love to hear your take. ■

Visit Editor in Chief Harry McCracken's Weblog at blogs.pcworld.com/techlog.



This Month's Free Issue of *Digital World*: *PC World*'s companion consumer electronics publication is gearing up for the holidays with lab tests of DVD recorders for the living room, gift recommendations, a look at the quirky world of personal robots, and much more. If you're a *PC World* subscriber, you can download the December *Digital World* as a PDF at find.pcworld.com/43830. Copies of *PC World* that are sold at newsstands and other retailers include the print version. Check out www.digital-world.com for more information.

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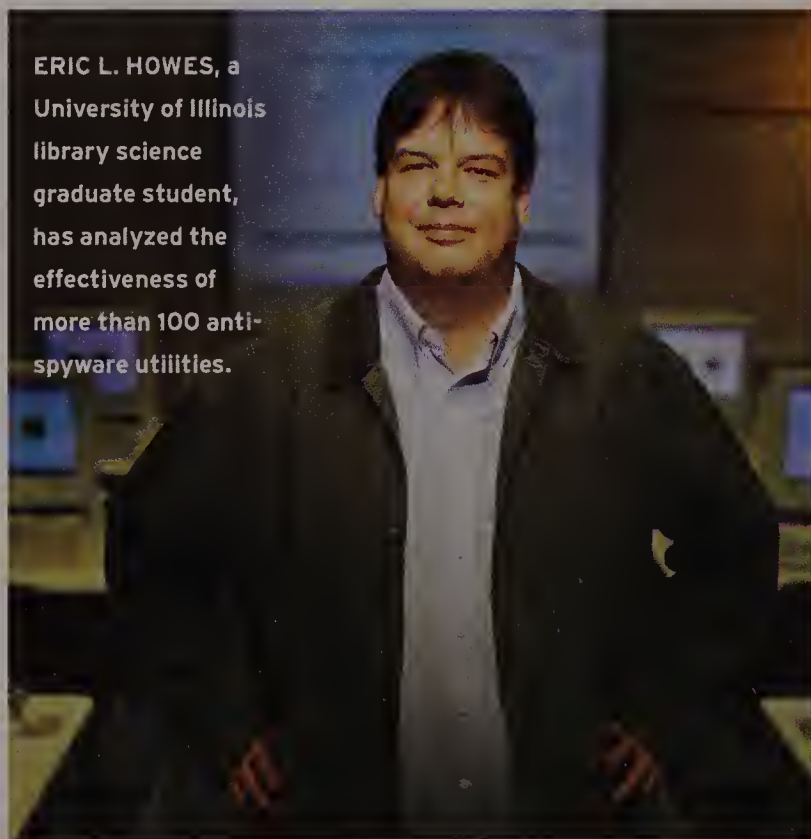
Poor Defenders

SOME ANTI-SPYWARE COMPANIES USE CONFUSING ADS, AND OUR TESTS SHOW THEIR \$20-\$60 PRODUCTS ARE LESS EFFECTIVE THAN FREE COMPETITORS. **BY ANDREW BRANDT**

YOU'VE ALMOST certainly encountered the ads: A dialog box pops up on your system, bearing the message "Warning! Your computer may be infected with spyware" and suggesting that you scan your computer immediately. Click it, and you often reach a Web site providing a "free spyware scanner" that finds all sorts of malware on your PC—and then offers to sell you software that will clean it all up.

Should you buy these products? Based on our tests, our opinion is no. Following complaints from several *PC World* readers, we tested seven heavily advertised spyware-removal tools—MyNetProtector, No-Adware, PAL Spyware Remover, SpyAssault, SpyBlocs, Spyware Stormer, and Xoft-Spy—and found that none were as effective as reputable

ERIC L. HOWES, a University of Illinois library science graduate student, has analyzed the effectiveness of more than 100 anti-spyware utilities.



free products such as Spybot Search & Destroy. A couple even installed new spyware.

While bills addressing spyware work their way through Congress (see find.pcworld.com/45202), spyware-removal

marketing has already caught the attention of the Federal Trade Commission. In October the FTC filed suit against Sanford Wallace—a former

self-styled spam king—Seismic Entertainment, and Smartbot.net, saying that they took advantage of browser security holes to plant code that displayed ads promoting, among other products, their own \$30 spyware remover (variously called Spy Wiper or Spy Deleter). The FTC is asking Seismic to return any "ill-gotten gains" to its customers.

VOLUNTEER HELP

THESE ADVERTISING tactics don't sit well with Eric L. Howes, a University of Illinois at Urbana-Champaign library science graduate student who analyzes anti-spyware utilities for SpywareWarrior.com. The volunteer-run site is associated with the Alliance of Security Analysis Professionals (www.a-sap.org), a network of organizations that dole out

free advice about security, including info about spyware and spyware-removal programs. (Howes himself is not a member of ASAP.)

Howes says that the ads for some spyware-removal applications suggest that they have scanned your PC and found spyware when in fact they "just plain haven't done any scans whatsoever."

Leighann Smith, a homemaker from Independence, Kentucky, was among those who complained to us. She bought NoAdware hoping it would address her computer's spyware symptoms, including crashing and a home page that kept changing to child porn sites.

NoAdware "removed some stuff, but it also deleted something on the hard drive so the computer couldn't reboot," Smith says. After reinstalling Windows, Smith sent multiple messages to NoAdware requesting a refund, which she received four months after her initial request.

INEFFECTIVE TOOLS

TO SEE FOR ourselves how well NoAdware and the others worked, we installed Windows XP on a clean hard drive, patched it, and then infected the system with six spyware applications chosen as a representative sample of the hundreds that exist. While our test is not comprehensive, the six programs include frequently used and widely available types of adware and spyware, including Browser Helper Objects and executable files.

The programs engage in a wide range of typical spyware behavior, such as changing a browser's home page, modifying Windows' Hosts file,

downloading additional adware apps, and putting references to themselves into the Registry so that they'll launch when Windows does.

No spyware-removal utility is perfect; in our experience, even free tools we've found effective in previous tests, such as Spybot Search & Destroy, will fail to detect spy-



MyNetProtector added 57 files to our PC, including files that display ads and alter browser settings.

ware that another good program might find. But we felt any spyware remover worth its salt should be able to detect and remove most of these common adware apps. After infecting the PC, we scanned it with one of the anti-spyware tools, starting the process over again for each one. As a control, we also ran the test using Spybot Search & Destroy.

Spyware programs put keys in the Windows Registry that are usually benign; they also

install executable and DLL files, which are more dangerous. Ideally, anti-spyware software should remove both the keys and the files. But three products we tested removed browser cookies but no other files or Registry keys; one removed keys for two out of a possible six applications, but no files; and three removed files for some apps but left others untouched (see the chart on page 24).

SpyBlocs and PAL Spyware Remover not only failed to detect or remove any of our planted spyware, they identified legitimate parts of Windows or other applications as spyware and deleted them. SpyBlocs, for example, deleted a critical system folder where Windows stores its signed device drivers, which on some PCs might have resulted in an unrecoverable system crash. (The vendor says this was due to a bug that will be corrected in future versions.)

Even more remarkable, two other programs we tested installed spyware applications on our system. SpyAssault left a file called FavoriteMan, a browser hijacker listed in online spyware databases such as SpywareGuide.com. MyNetProtector installed a whopping 57 files, including 19 that attempted to make connections to the Internet—in some cases within seconds of installation. Among the programs it loaded were BargainBuddy, EZula, and PurityScan, all of which (according to SpywareGuide.com's database) display pop-up ads and change browser settings on PCs.

Our free control application, Spybot Search & Destroy, removed Registry keys for ►

IN BRIEF

Product Pipeline



NEXT TREO: PalmOne's Treo 650 cell phone-PDA hybrid addresses many of the minor complaints users had about the popular Treo 600. Improvements in the new model include a high-resolution (320-by-320) screen, a faster CPU, a more ergonomic thumb keyboard, a removable rechargeable battery, and a VGA camera that now captures video as well as still images. Carriers and prices had not been announced at press time.

CHIPS AHOY! Intel and AMD have launched their latest salvos in the war for bragging rights to the fastest chip on the block. AMD has released the new 2.6-GHz Athlon 64 FX-55, which uses a 2-GHz HyperTransport bus and has 1MB of L2 cache. Nvidia and Via each will offer motherboards for Athlon 64 chips with PCI Express graphics to further pump up system speed. Meanwhile, Intel has released the 3.46-GHz Pentium 4 Extreme Edition, which boasts 2MB of L2 cache and now features a 1066-MHz frontside bus (up from 800 MHz). Expect these chips to appear in fully decked-out gaming systems in time for the holidays.

four applications, and executable and DLL files associated with five spyware apps.

We attempted to contact the companies that make the applications we tested, via multiple e-mail messages and telephone calls to the addresses and phone numbers listed in the Whois registration information for each company's domain name. At press time, only a few had replied.

COMPANIES RESPOND

NATHAN SHAFER, answering our e-mail message to Spyware Stormer, challenged our test methodology. Shafer wrote that Spyware Stormer detects "over 20,000 variants of spyware and adware," and that its performance with the six applications we chose was therefore "hardly representative in any way."

PAL Solutions, which pro-

duces PAL Spyware Remover, responded to questions about the test results by saying that a yet-to-be-released version of its software would detect as many as 5000 spyware applications, compared with the 600 programs the version we tested was supposed to detect. Similarly, a representative of Network Dynamics, which makes SpyBlocs, said that a newer version of the product had been released after our testing cut-off date.

We were unable to reach NoAdware, but the Better Business Bureau of Upstate New York reported that it had received 22 complaints (find.pcworld.com/44926) about the company, which is not a member of the BBB, by early October. Network Dynamics has a clean record as a member of Southern California's BBB. The BBB's complaint

database contained no record of complaints for the remainder of the companies whose products we tested.

HARD SELL

ASIDE FROM their shortcomings as spyware removers, many of these utilities use aggressive marketing tactics in pop-up ads, spam, and keyword ads appearing alongside Google search results.

Some companies use pop-ups that mimic the appearance of Windows dialog boxes but include the word *advertisement* in light gray text in a corner, where it might easily escape a PC user's notice.

Some companies employ a domain name that contains the name or names of better-known competing programs. For example, the Web site www.spybot-virus-scan.com, which some consumers might

expect to be associated with Spybot Search & Destroy, promotes PAL Spyware Remover.

Still other companies buy ads on Google pages displaying search results for the names of popular competitors. When we searched for "Ad-Aware," for example, we found an ad for NoAdware.

PROTECT YOUR PC

TO FIND OUT more about other people's experiences with spyware-removal tools, check sources such as the message boards on sites listed at www.a-sap.org.

The Better Business Bureau's Web site (www.bbb.org) is another good source: There you can type in a company's URL to search for records and complaints.

Howes recommends avoiding products promoted in ads that appear designed to increase your anxiety level, such as pop-up ads that look similar to Windows dialog boxes. He suggests using a combination of free spyware removers first—Spybot (find.pcworld.com/42052) and Ad-Aware SE Personal (find.pcworld.com/44236). If you continue to experience any unexpected changes to your computer system, try a commercial application such as PestPatrol (find.pcworld.com/45214), which detected all of the spyware on our test system.

Don't let marketing tactics scare you into paying for an anti-spyware product that may not do as good a job of protecting your PC as a free application. It pays to do a little homework before you punch in those credit card numbers.

Freelance writer Mary Landesman did testing for this story.

TEST REPORT

DISAPPOINTING ANTI-SPYWARE TOOLS

COMMERCIAL PRODUCTS PROMOTED in spam and pop-up ads work less well than quality freeware.

PROGRAM	Spyware applications and related files removed ¹	Spyware Registry keys removed ¹	Comments
MyNetProtector \$40 www.mynetprotector.com	0	0	Program added 57 spyware files to the test computer, and then detected (and removed) only a cookie from DoubleClick.
NoAdware \$30 www.noaware.net	0	2	Could delete only a few Registry keys associated with two of our six test spyware applications.
PAL Spyware Remover \$30 www.palsol.com	0	0	Claimed that a legitimate component of the Trend Micro antivirus program was spyware.
SpyAssault \$20 www.spyassault.com	3	0	Multiple false positives; free and paid scanners gave inconsistent results. Added and later removed a spyware app.
SpyBlocs 2 \$40 www.eblocs.com	0	0	Identified Microsoft Windows' signed driver folder as "Severe" spyware and deleted it during the cleanup.
Spyware Stormer \$30 www.spywarestormer.com	3	2	Labeled cookies as "high-risk"; misidentified a standard Windows Registry key as a browser hijacker.
XoftSpy \$30 www.paretologic.com	4	1	Removes most files but leaves many Registry keys behind; exaggerates the risk of tracking cookies.
REFERENCE APP			
Spybot Search & Destroy 1.3 Free find.pcworld.com/42052	5	4	Could not remove one particular browser "toolbar" hijacker; real-time TeaTimer tool prevented some infections.

FOOTNOTE: ¹ We tested each tool to see if it could remove the files and Registry keys for six common spyware/adware apps. Each entry indicates the number of apps, out of the six, whose components were successfully removed. For details on our testing methodology, see find.pcworld.com/44942.



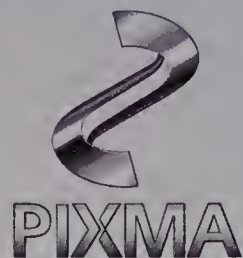
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- Direct photo printing from PictBridge compatible digital cameras and DV camcorders***

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- ContrastPLUS ink system for true-life photos and laser-quality text

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New Media Center OS Plays Well

WINDOWS XP MEDIA CENTER 2005 CONNECTS SMOOTHLY WITH VIDEO AND AUDIO EQUIPMENT.

MICROSOFT'S NEW Windows XP Media Center 2005 operating system has new features that help a PC compete with consumer electronics devices in the living room, and that turn a PC into a house server capable of feeding audio and video to multiple devices on a wireless network. We tried out a preproduction PC with the new operating system.

ENTERTAINMENT TONIGHT

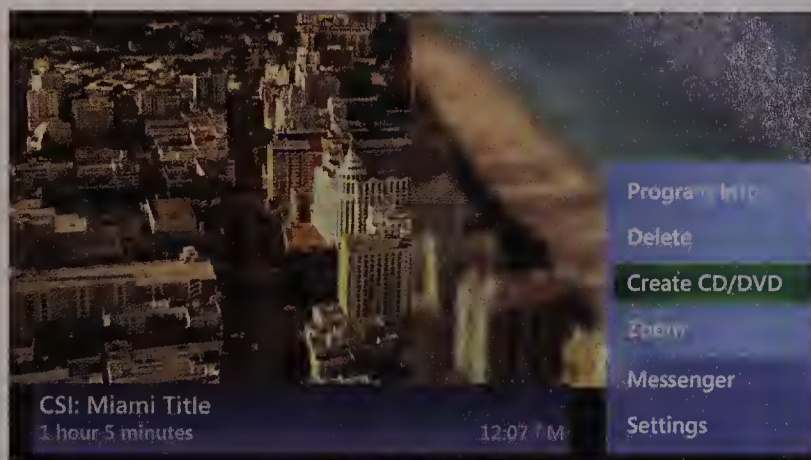
AS DID THE previous version released in 2003, Media Center 2005 plays DVD movies, tunes in and records television programming, and manages your digital music library. It behaves like an application: Set it to start with Windows, or shut it down to make the desktop look—and work—like any other Windows XP box.

All Media Center 2005 PCs

have TV-tuner cards carrying one or two discrete tuners. With two tuners, you can simultaneously watch one show and record another (or simultaneously record two shows). Even with a single-tuner card, though, the operating system lets you pause live television.

Analog TV should look better on new Media Center PCs than on the first-generation machines. The tuner cards in 2005 models compress live TV signals at a variable bit rate of up to 9 MBps, surpassing the fixed 6-MBps rate of last year's media PCs. Comb filters are used to improve the look of standard-definition signals.

In addition, you can burn DVDs from within Windows Media Center 2005—which you couldn't do with the first release. Just right-click your mouse or click a button on the Media Center remote to bring



RECORD YOUR FAVORITE TV shows on your PC with a single click of a mouse or a remote control, with Windows XP Media Center 2005.

up the Create CD/DVD command. DVD and CD burning worked perfectly on our test system, except when we tried to burn an HD clip. In that case, the OS wouldn't allow burning to a video DVD, only to a Windows Media file.

TV ANYWHERE

YOU CAN TAKE advantage of Media Center features with other computers throughout

the house, as well as with Media Center Extender devices. Extenders pull digital audio and standard-definition video (HDTV may be added in the future) over either an 802.11a or an 802.11g wireless network and play them through a stereo or TV. Dell, HP, Linksys, and Tatung, among others, will sell Extender devices. Dell's version will reportedly cost \$275; an Extender kit for Microsoft's Xbox will cost \$80.

Most media PCs use Pentium processors, but Alienware says it will outfit at least some boxes with AMD Athlon 64 CPUs. To see whether the new OS hurts performance, we ran WorldBench 5 on a Media Center 2005 system, and then reran the benchmark on the same PC but with Windows XP Home (and the latest component drivers) installed. We found virtually no difference: With Media Center, the PC had a WorldBench 5 score of 81, while with Windows XP Home its score was 82, close enough for us to call it a wash.

—Alan Stafford

MEDIA PCs

UPCOMING MEDIA CENTER MODELS

MOST MAJOR VENDORS will offer desktops and notebooks running the Media Center 2005 OS—but thanks to a change in Microsoft's licensing, other system builders will also offer it.

VENDOR	Model	Base price	Comments
Alienware	DHS 5	\$1799	Company says it will put Athlon 64 processors in this media desktop; it will offer the Media Center OS on all desktops and notebooks.
Dell	Dimension 8400	\$1138	Dell's standard desktop case can be configured with Media Center or any other Windows version.
Gateway	820GM Media Center PC	\$1250	Gateway's first Media Center PC desktop will be sold retail, but custom-built models will follow.
HP	Pavilion Zd8000	\$1400	An updated version of the Zx7000, this notebook uses a desktop CPU and has a 17-inch wide-screen display.
Sony	VAIO VGC-RA920	\$1410	Despite Media Center's video recording capabilities, Sony says it will still ship media desktops with its GigaPocket DVR software.
Toshiba	Qosmio G15-AV501	\$2999	Notebook has a 17-inch WXGA wide-screen display and can play DVDs without booting the OS.

WIRELESS

Cell Phones Do Broadband

NEW PHONES AND PC CARDS TAKE ADVANTAGE OF FASTER NETWORKS.

IF WAITING for e-mail to download onto your cell phone drives you nuts, try dialing in with one of the new devices available that tap into a speedier, next-generation network.

We looked at three products that use one of two new networks: the speedy Enhanced Data Rates for Global Evolution (EDGE) network or the even speedier Universal Mobile Telecommunications System (UMTS) one. Both represent next-generation service from carriers with GSM/GPRS networks, including AT&T Wireless (which is now owned by Cingular), Cingular, and T-Mobile. But not all carriers offer the faster services in all locations.

SPEED DIALING

WE PERFORMED some informal tests using the Novatel Merlin U520 UMTS-based PC Card (\$150 with a two-year service contract from AT&T Wireless) with a laptop, and



NOKIA'S 6620 EDGE phone (left) and Motorola's A845 UMTS cell phone support fast browsing.

using Motorola's A845 UMTS phone (\$300 with a two-year plan from AT&T) and the Nokia 6620 EDGE phone (\$400 with a two-year AT&T contract). The near-DSL speeds we saw impressed us (see chart), though transfer rates were still well below the maximum for each technology. You'll definitely notice faster surfing and data downloads than you get with GPRS service (which has

a maximum speed of 50 kbps). And you'll be able to take advantage of new video services as well.

We tried each of the two phones with one such service, RealTV, which for \$5 a month lets you stream prerecorded video clips of news and sports, for example. Clips were typically smooth on the Motorola but choppy on the Nokia. And on occasion RealTV failed to load at all, even when both phones indicated a good signal.

Pricing for data and video services varies by carrier, and the monthly costs can quickly run to \$100 or more. But if you use your phone to surf the Web, you'll appreciate the faster speeds, especially with UMTS (which allows you to download data and make a phone call simultaneously). For now, UMTS is available only in Dallas, Detroit, Phoenix, San Diego, San Francisco, and Seattle from AT&T (Cingular has trials in Atlanta), while EDGE is available in more than 7500 U.S. cities from AT&T and Cingular (if you're not in an EDGE or UMTS coverage area, most devices will revert to the slower GPRS network). Next year, there's more: a new network upgrade called High Speed Data Packet Access, which promises a maximum speed of 10 to 14 mbps.

—Grace Aquino

PATHS TO FASTER ACCESS

UMTS NETWORKS deliver DSL speeds for phone and PC Card users.

NETWORK AND DEVICE	Highest speed we experienced ¹	Vendor-rated average speed ¹	Maximum possible speed
EDGE: Nokia 6620 cell phone	82 kbps	100 to 130 kbps	384 kbps
UMTS: Motorola A845 cell phone and Novatel Merlin U520 PC Card	291 kbps (phone), ² 320 kbps (card)	220 to 320 kbps	2 mbps

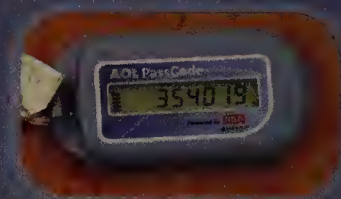
FOOTNOTES: ¹ Download only. ² Speed achieved outdoors; highest speed indoors was 66 kbps. **HOW WE TESTED:** We performed several informal upload and download tests at OSLeports.com with each device, both indoors and outdoors. We set up the phones as laptop modems for testing. See complete upload results at find.pcworld.com/44946.

IN BRIEF

Tidbytes



BIG THINGS IN LITTLE PACKAGES: Now you can cram 8GB of data on a CompactFlash Type I card. The offering has the largest capacity of any Type I card of its kind, says its manufacturer, SanDisk. The Ultra II CompactFlash card costs \$960. The matchbook-size storage device with Grand Canyon capacity can write data at 9 megabytes per second and read it at 10 MBps.



AOL ADDS PASSWORD PROTECTION: Want a more secure America Online account? That'll be \$2 extra per month for a service called AOL PassCode. AOL adds an extra layer of password protection to thwart account break-ins with a keychain-size device that locks up your account tighter than Fort Knox. The PassCode device and AOL's servers are synchronized so that a code generated by the device will match a six-digit number generated every 60 seconds by the servers. To log in, you type your screen name and password, as you would normally; then you also enter the number displayed on the PassCode device.

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ZT recommends Microsoft® Windows® XP Media Center Edition 2005



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 Microsoft® Windows® XP Media Center Edition 2005
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 Intel® D915GAVL Mainboard
 512MB PC3200 Dual Channel DDR400
 Seagate® 160GB Serial ATA/150 (8MB Cache) Hard Drive
 7 in 1 Media Reader
 128MB ATI RADEON™ X600 XT w/TV-Out & DVI "PCI EXPRESS"
 16x DVD±RW & CD-RW Combo Drive
 Creative Labs SB Audigy 2 ZS 7.1 w/ Firewire 1394
 Intel® 10/100 LAN
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 Logitech® Cordless MX Duo Keyboard & Rechargeable Optical Wheel Mouse
 Logitech® Z-5300 6.1 THX Certify 6-Piece Speakers w/ Subwoofer (add \$149.00)
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\$1,349

* Monitor sold separately

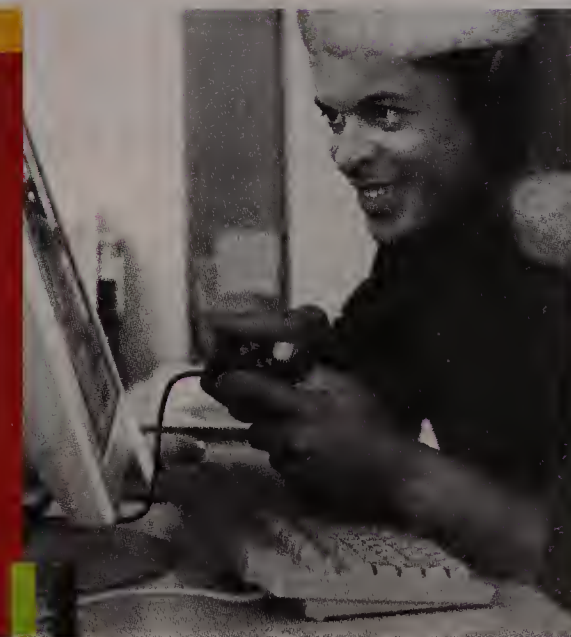
ZT PRO Gaming PC X6556

Intel® Pentium® 4 Processor 540 with HT Technology (3.20 GHz, 1MB L2 Cache, 800MHz)
 Microsoft® Windows® XP Home Edition w/Service Pack 2
 Intel® D915GAVL Mainboard
 512MB PC3200 Dual Channel DDR400
 Seagate® 160GB Serial ATA/150 (8MB Cache) 7200rpm Hard Drive
 7 in 1 Media Reader
 256MB ATI RADEON™ X600 PRO w/TV-Out & DVI "PCI EXPRESS"
 16x DVD±RW & CD-RW Combo Drive
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 Intel® 10/100 LAN
 Cooler Master MID Tower Chassis w/350Watt Power Supply
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DOWNLOADS

Get Hot New Software Without the Wait

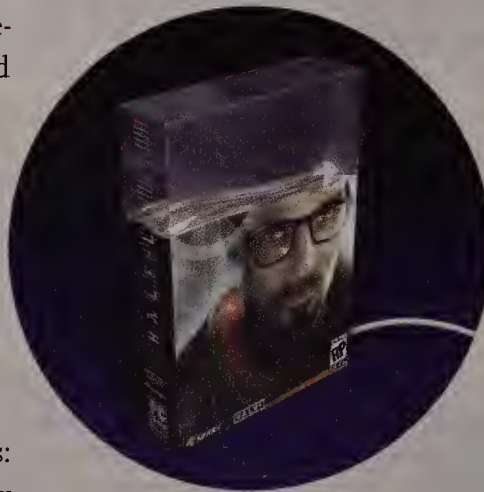
NEW DOWNLOAD MODEL ALLOWS YOU TO PRELOAD LARGE APPS IN STAGES.

JUST CAN'T WAIT to play the Half-Life 2 game? You can pick it up the moment it goes on sale, without leaving your home. Many fans already have 3.3GB of the game loaded on their systems, thanks to game maker Valve Software's new online distribution method, and are awaiting only a small activation piece to play the full game upon its release (which should be at about the time you read this). Users don't pay until they activate the game.

You've been able to down-

load software patches, shareware, and some programs and games for some time. Many multigigabyte programs, however, including Microsoft Office, have been considered too large to download even with broadband. For its 4.5GB game, Valve gets around the issue by offering its downloads in stages: As of early October, roughly 200,000 eager gamers had loaded five parts of Half-Life 2 using Steam, the company's online distribution system.

Online distribution is the wave of the future for many PC apps, says IDC research director Cushing Anderson. He also expects the large tech retailers, such as CompUSA,



to eventually offer applications online—either in one chunk or in stages—as broadband continues to proliferate. However, “it will be many years before it becomes the majority of software sales,” he says.

There may be a few kinks to iron out along the way. During Steam beta-testing, some

fans voiced frustration when the system's bandwidth was overwhelmed. But Steam has been running commercially since March with no trouble, says spokesperson Doug Lombardi. (Two of Valve's Counter-Strike game titles sell via Steam, too.) And much as Microsoft does with its Windows Update, Valve promises to send automatic updates via Steam when the games need patching.

Most game buyers won't be eager enough for new titles to make preload methods such as Valve's the norm anytime soon, says IDC analyst Schelley Olhava. But for those who are, life just got more fun.

—Laurianne McLaughlin

AUCTIONS

Billing Glitches Anger EBay Sellers

A CLASS ACTION LAWSUIT CHARGES THE ONLINE AUCTION GIANT WITH UNLAWFUL PRACTICES.

NANCY SPAULDING, from North Ridgeville, Ohio, noticed something strange in her monthly invoice from EBay—listing fees and other items appeared to be double-billed and then credited back. There was so much back and forth, it was hard to tell if she had been overcharged. She's one of many EBay sellers to experience the problem since the auction site switched to a new billing system earlier this year. Spaulding, a longtime buyer turned clothing seller in the past year, has stopped listing items on EBay and doesn't know if she'll ever resume.



And in July, Spaulding and another plaintiff filed a class action suit against EBay. The suit accuses the site of engaging in unlawful and deceptive conduct with respect to its billing practices. EBay firmly denies the allegations and says that all problems have been

corrected—a claim the suit apparently does not dispute.

Software glitches in the new system did cause some sellers to be double-billed for certain items, says Hani Durzy, an EBay spokesperson. EBay says that it became aware of such problems in April. However, although the extra charges appeared on the invoice, no one's account was actually debited, he claims, because the company immediately halted automatic payments for affected users (some users opt to have their debit card or credit card automatically charged upon receipt of each invoice).

The double-billing glitch was fixed “within weeks” of being discovered, according to Durzy. Users allege, however, that they continued to see incorrect totals on their invoices long afterward, and some of them complain that EBay suspended their accounts for non-payment. Durzy admits that a small number of sellers were accidentally suspended, but he says that EBay corrected the problem within 72 hours.

The lawsuit was on hold at press time as both sides met with a judge to try to resolve the situation without a trial.

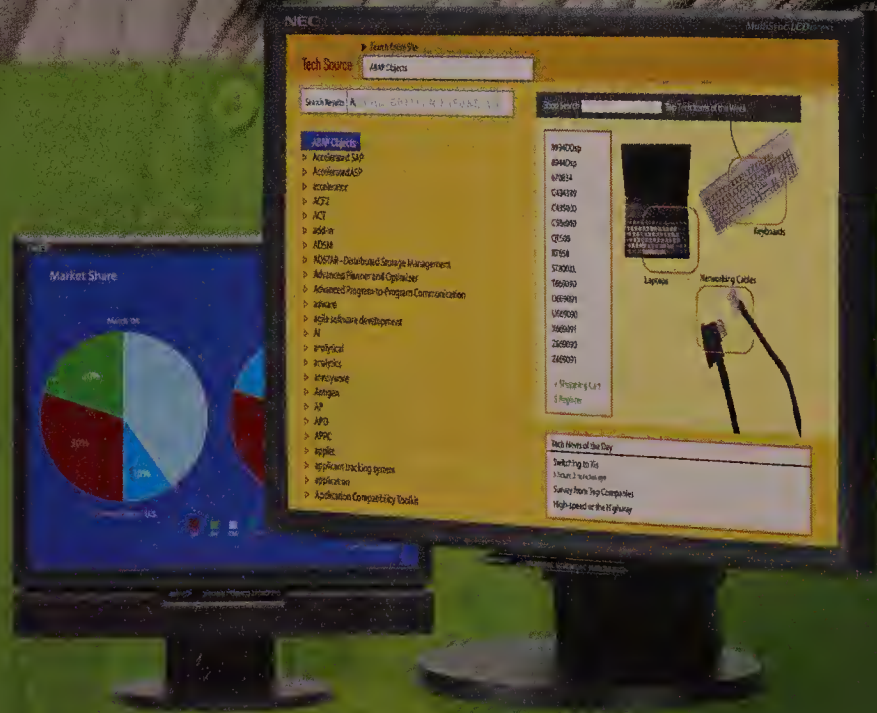
—Liane Cassavoy

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UPGRADES

Fast RAM Provides Low Value

SLIM GAINS FROM LOW-LATENCY RAM DON'T JUSTIFY A STEEP PRICE.

WITH MORE retailers and boutique vendors touting high-speed (low-latency) RAM, two questions leap to mind: What is it, and do I need it? Last things first. Fast RAM is almost never worth the money, unless you're a dedicated gamer or gearhead obsessed with wringing every last millisecond of performance from your system.

Low-latency RAM takes less time to fetch the first bit of data after the CPU sends a column address strobe (CAS) signal to main memory. Such differences add up in tiny fractions of a second as your system processes instructions for the game you're playing or the database you're working with. Vendors list latencies for various memory functions; the first number is the CAS latency (CL), and when it's down to



HIGH-SPEED memory modules from vendors Corsair, Crucial, and Kingston.

2 on Intel-based systems (2.5 with AMD CPUs), you're really humming. Such memory carries a high price premium, often 20 to 40 percent more than slower RAM. A 512MB DDR400 module from Crucial, for example, costs about \$100 at CL3 and \$139 at CL2.

Vendors are careful to downplay any speed advantages. Latency differences may give you only a 2 percent boost in

system performance, says John Stroozas, Crucial's director of engineering.

To gauge the benefits, PC World tested a PC with an AMD Athlon 64 CPU and standard memory, and then we swapped in faster RAM from Corsair Memory, Crucial Technology, and Kingston Technology, in turn. Improvement was negligible in most of our tests (see chart). Gaming

tests showed the most benefit, with 4 to 5 percent gains in some cases (for detailed results, see find.pcworld.com/44932). There was little difference among memory brands.

Low-latency RAM should eventually drop in price. But for now, if you didn't know what CAS was before reading this article, you probably don't need low-latency memory.

—David Essex

TEST REPORT

FAST RAM GIVES GAMES A BOOST

LOW-LATENCY DDR MEMORY provides a modest performance boost to large-data-set, graphics-intensive applications (like the Doom 3 game). But mainstream apps show minimal gains.

MEMORY	Memory speed	WorldBench 5 Faster	WorldBench 5 Mozilla 1.4 ¹	Doom 3 ²	Return to Castle Wolfenstein ³
Average of three results at 512MB	Low-latency	95	403	74	142
Average of three results at 512MB	Standard	95	416	71	135
Average of three results at 1GB	Low-latency	98	404	75	144
Average of two results at 1GB	Standard	97	416	72	139



FOOTNOTES: ¹In seconds. ²Frames per second, at 640 by 480 resolution and 16-bit color depth. ³Frames per second, at 1024 by 768 resolution and 16-bit color depth. **HOW WE TEST:** We tested an AMD Athlon 64-based system with Windows XP Professional using a pair of low-latency DDR RAM modules, and then a pair of standard DDR RAM modules, at both 512MB total and 1GB total. We used low-latency parts from Corsair, Crucial, and Kingston, in turn. For details on WorldBench 5, see www.worldbench.com. In the Mozilla subset of tests, we timed the loading of 115 Web pages, four times. For details on the gaming tests as well as for additional results, see find.pcworld.com/44932. **CHART NOTES:** On the Mozilla test, lower is better; elsewhere, higher is better. Bold denotes best score.

IN BRIEF

Product Pipeline



PHONE ASTRONOMER:

Beginning stargazers who sometimes have to ask "Is that Orion's belt or the Big Dipper?" now have mobile help to call on. This winter, cell phone software maker Digital Chocolate will roll out StarGazer 2Go, and the program will be available from leading wireless carriers. Punch in your area code, and StarGazer 2Go can render the night sky on your cell phone display, allowing you to look up and identify the names of the stars and constellations above.

Tidbyte

FREE REMOTE DESKTOP

ACCESS: Genuinely free and valuable Internet services are difficult to find. 3am Labs may be an exception to the rule, though. The company's free LogMeIn desktop remote control system permits you to access a PC from thousands of miles away. You can use it to check e-mail, for instance, or to open a crucial document that you left on your home computer. If you want to transfer files, however, you'll have to pony up \$99 per year for a LogMeIn Pro account.



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It's a true multimedia experience from Sprint PCS VisionSM and Samsung[®]. Watch high-quality streaming video from Sprint TV, featuring clips from CNN[®], FOX Sports[®], The Weather Channel[®] and more. All on a Sprint-powered Media Player, with exceptional sound and in vivid color. Amazingly, that's not all:

- It has a 1-megapixel flash camera with swivel design.
- You can shoot 15-second video clips with sound.
- It's Sprint PCS Vision capable, for games, ringers, screen savers, Web and more.
- And it's SMS Text Messaging capable, of course.

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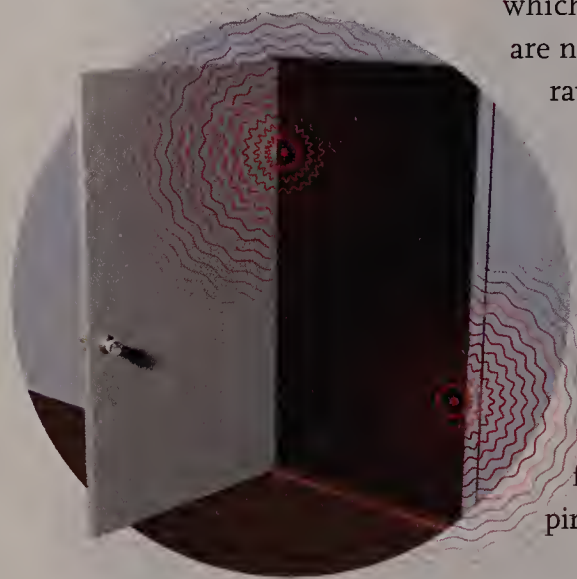
FUTURE TECH

A Room That Knows You

YOU THINK YOUR new car is festooned with information-seeking sensors? Imagine this: sensor modules, each the size of a speck of dust, that are networked together wirelessly to relay information. In this array, the tiny "Smart Dust" devices can sense your presence

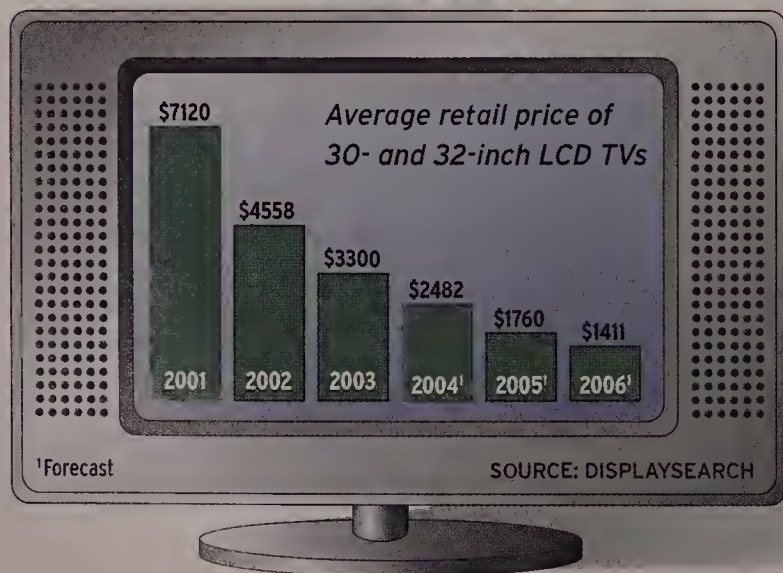
when you enter your office, for example, and will adjust the light, heat, and other comforts to your preferences. Kris Pister, founder and CTO of Dust Networks, has already shown working sensors in an academic lab. His company's deck of card-size devices, which run on AA batteries, are now being used in separate trials to keep track of electricity consumption in grocery stores and to monitor building security. "It might be a while before these things are routinely dust size. But we're already headed down from bottlecap to aspirin," Pister says.

—Anne B. McDonald



PRICE CHECK

LCD TVs: BIG CUTS



THE COST OF THIN AND entertaining is dropping precipitously. This year's estimated average retail price for slim 30- and 32-inch LCD televisions, \$2482, is down 25 percent from last year's average price, according to display research firm DisplaySearch. And prices will plummet even faster next year, by an estimated 29 percent. Declines aren't expected to slow until 2006.

—Yardena Arar

THREE MINUTES

Cyberdreams of Immortality



TECH PIONEER and futurist Ray Kurzweil, 56, invented the flatbed scanner and developed the first text-to-speech machine for the blind, among other achievements. He is coauthor of *Fantastic Voyage: Live Long Enough to Live Forever*, which tells how new technologies will push our life spans into near immortality.

How does technology allow us to "live forever"?

We're starting to place computerized biochemical sensors in our bodies that can monitor our health and make diagnostic decisions. An artificial pancreas is now undergoing clinical trials. Ultimately we'll be able to pick up the brain patterns of a physically disabled person, translate those signals, and transmit them wirelessly to [their] limbs to restore their ability to move and walk.

Biotechnology will lead to nanotechnology by 2020. The killer app for nanotechnology will be nanobots—computerized robots the size of blood cells. Inside our bodies and brains, nanobots will provide life extension by destroying pathogens and cancer cells, repairing DNA errors and otherwise reversing aging.

Is that a double-edged sword?

The 21st-century technologies have the potential to overcome problems that humanity has struggled with for eons. How many would really want to go back one or two centuries to the labor-filled, disease- and disaster-prone lives that people lived?

But...self-replicating nanobots could essentially be a nonbiological cancer that could be a serious bio-threat. If we do as well as we have with stopping software and biological viruses, then we'll be able to keep a step or two ahead of technology dangers.

How has voice recognition succeeded and failed?

Accuracy continues to improve only gradually. But we are beginning to see large-vocabulary, speaker-independent speech recognition over the telephone. You can speak to British Airways' virtual travel agent about anything you want, so long as it has to do with making reservations on [the airline]. Many companies are doing this, and this will be very widespread over the next several years. (Visit find.pcworld.com/45210 to read an extended version of this interview.)

—Tom Spring ■



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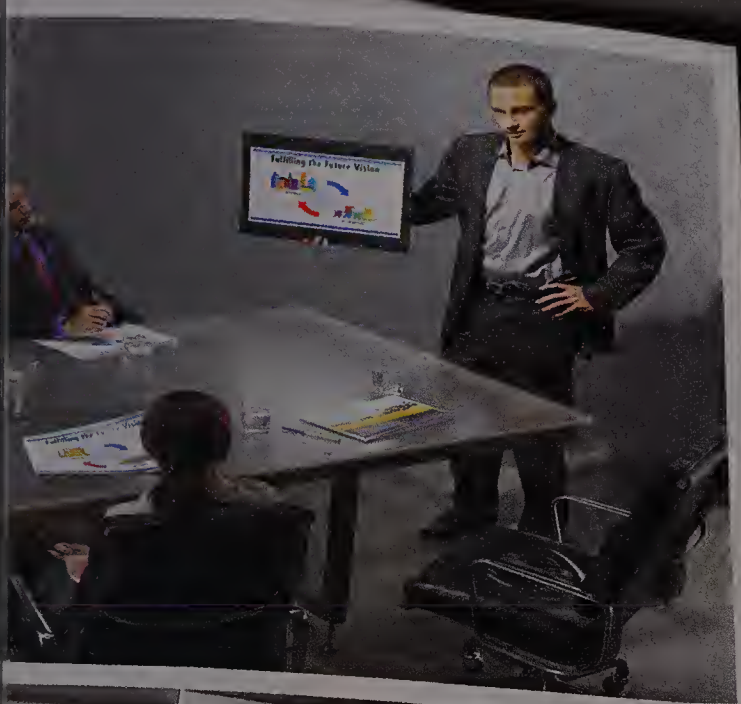


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THE PC FOR HEAVY-
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WANTED: OLD-TIME
DOCUMENTATION



FIGHTING ANNOYANCES

I ENJOYED your entire October issue, but one hint in the Annoyances articles made the whole magazine worthwhile.

Like many former users of RealPlayer, I'd given up on it because newer versions added annoyances. That, however, kept me from listening to many things online that were geared to work only with RealPlayer. I saw the item on Real Alternative [in "Enough Already!" page 86], and downloaded the player last night. So far, it works wonderfully—without those annoying features of its software cousin.

Carole McNall, Olean, New York

AS A POWER USER who subscribes to many computer magazines, I'm always wary of "How to Fix Annoyances" issues. Rarely do I find tips or tricks that are truly new and unique. But your October articles were outstanding! My system is running sleeker and faster than ever—I was able to get rid of some bloatware and replace it with your RealPlayer and QuickTime alternatives.

Christopher Maselli, via the Internet

READING "Can't Find Duplicate Files" in "Annoyance Busters," I felt compelled to offer my absolutely free way to discover most duplicate files using the Windows

XP Professional operating system.

Click **Start•Search•What size is it•Large (more than 1 MB)** and then **Search**. When the search is finished, click **View•Details•Arrange by Size**, and voilà. It won't give you all the duplicates, but it will certainly show you the most useless ones.

One warning: When in doubt, don't throw it out, unless you're absolutely certain you don't need the file. And never risk deleting hidden system files. I focus on text and PDF files to be safe. Anything else, I usually ignore. Sometimes there are supposed to be duplicates.

Jeffrey W. Frazier, Roswell, Georgia

YOU MISSED one huge annoyance: I use Hotmail as my primary e-mail service, and it does provide blocking and filters for junk mail. But to block a specific message in my junk e-mail folder, I have to open that piece of mail and then click the Block button. Because of the dangers in unsolicited mail, every time I have to do this I run for my Spybot Search & Destroy and Ad-Aware buttons!

Peter N. Byer,

East Greenwich, Rhode Island

GOOD CITIZENS?

HEWLETT-PACKARD, to which you give a Good Citizen Award for its recycling programs ["Hall of Shame & Hall of Fame," October], makes it hell for one to recycle one's money back via rebates: Web page offers are not matched by coupons (which turn out to be outdated), and who else asks for a part number that's not on the product, listed on the Web site, or available from telephone help-line personnel?

Harold Gotthelf, Fords, New Jersey

YOU PRAISE BEST BUY as making it easy to redeem rebates because the stores print out rebate receipts. Well, yes, that aspect is easy, but currently in a Columbus, Ohio, test market, they give your rebate in the form of a "cash card" that you take to your local outlet—where they hope you will spend it. But if the amount on the card is over \$250, you must wait for a check in the mail. That's six to eight weeks to get the "cash card," then another six to eight weeks to get a check that should have been issued in the first place.

Vinh Nguyen, via the Internet ►

LETTER OF THE MONTH

VoIP? Not for a Hurricane Survivor

YOUR ARTICLE in the September issue points out the benefits as well as some caveats with Voice over Internet Protocol phone service ["Net Phones Evolve," *News and Trends*], but I will not be an early adopter of this technology.

When Central Florida was hit with two hurricanes in less than a month [at this writing], my home lost electrical power for four days, and some of my neighbors lost power for a total of two weeks. My cable broadband Internet and TV were

out for two days longer than my power with the first hurricane, and for six days after the second despite no loss of electrical power.

All during that time, we never lost our old-fashioned copper-wire telephone service. I was even able to reacquaint myself with dial-up Internet while waiting for my cable modem to receive a signal again. Internet phone service? No, thanks.

Ron Oppenheim, Maitland, Florida

Photo Paper

KODAK COLORLAST Technology provides a lifetime of lasting brilliance

FOR THE Digital Century

»»» WITH ITS EASE OF USE, rapidly declining camera prices, and tremendous versatility, digital photography has caught on in a huge way among amateurs and professionals alike. So it is not surprising that digital photography enthusiasts printing their own photos want the same quality and print life for their digital photos that they traditionally get with film cameras.

For these digital photography lovers, Kodak has just what they want—namely, photo paper so advanced that the color and brilliance of photos produced with quality inkjet printers and premium inks will last more than 100 years.*

In fact under typical home display conditions, Ultima Picture Paper from Kodak with KODAK COLORLAST Technology is simply the longest lasting inkjet photo paper available. And the quality of digital prints on Kodak Ultima Picture Paper rivals that of traditional

print photos. Further, Ultima Picture Paper is universally compatible with any consumer desktop photo inkjet printer.

There are several environmental factors in the home that can reduce the life of your pictures, causing fading, loss in sharpness, and overall color shift. These factors include sunlight, air pollution, moisture, and heat. Scientific

research by Kodak determined how to protect your pictures from these fading factors, resulting in KODAK COLORLAST Technology that dramatically and measurably improves overall photo life.

Brilliant engineering, brilliant results

Just how KODAK COLORLAST Technology makes pictures stay brilliant for so long is a testimony to the long heritage of photo excellence and technical leadership that consumers and businesses have come to associate with Kodak. In fact, with Ultima Picture Paper Kodak brings to bear over a century of imaging materials science and manufacturing quality.

Ultima Picture Paper starts with the same high-quality, ultrastable, resin-coated paper as traditional silver halide photographic papers from Kodak. Then six coating layers are applied, three on the front and three on the back, to deliver a precise balance of

Ultima Picture Paper from Kodak takes a leap ahead in color and longevity for digital camera prints.



image quality and stability.

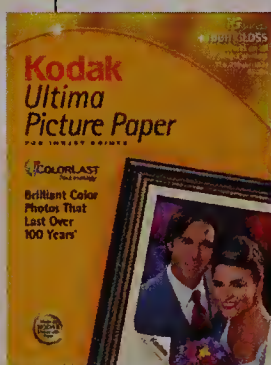
The key to this balance is the proprietary, three-layer ink-receiving composition. Using a unique blend of so-called mordants or additives to “fix” the dyes in the bottom two layers, along with nanoparticulate ceramic particles in the top layer to further stabilize the image, Kodak scientists have engineered a significant leap in longevity and brilliant color reproduction.

Or in other words, KODAK COLORLAST Technology locks ink molecules into the image layer, providing optimal protection from fading factors. The bottom line for digital photography enthusiasts is that the brilliant colors of their digital camera prints will stay brilliant—whether in a frame or a photo album.

The fact that only Kodak can deliver the staying power of Ultima Picture Paper is not surprising given that Kodak has been in the memory business for more than a century. Consumers and professional photographers alike have always known and trusted that with Kodak, their most precious and valued photos will last a lifetime. As photography moves rapidly to the digital world, you can still trust Kodak to make those prints last a lifetime too, thanks to the superb engineering that has produced KODAK COLORLAST Technology.

*Under typical home display conditions using the world's best-selling brand of printers and inks. See Web site for details.

■ For more information on Kodak Ultima Picture paper, and to learn more about the full range of quality inkjet papers, visit www.kodak.com/go/inkjet.



YOU LIST THE Dirty Dozen most annoying problems. The problem of sites hijacking your browser is number one. I agree with that, but you offer no explanation on how to correct it.

Paul Rando, Jr., via the Internet

Editor's response: The Dirty Dozen was simply a list of readers' nominations. The online article "Invasion of the Browser Snatchers" (find.pcworld.com/25781) explains browser hijacking. For protection, you can download a utility like Spyware-Guard (formerly Browser Hijack Blaster), at find.pcworld.com/39260.

MOZILLA GETS A FAN

I DOWNLOADED Mozilla Firefox ["You're Using an Annoying Browser," *Up Front*, October]. Wow! This was love at first click!

I used it about three times before clicking 'Make Firefox my default browser'. Next, I downloaded Mozilla Thunderbird [e-mail client]. Same instant love!

IE and Outlook are now as hidden as I can make them, and I have not found one instance that caused me to use either one. Mozilla has a winner!

Ron Freeman, via the Internet

IN PRAISE OF WORKSTATIONS

THANKS FOR at last writing an article about workstations ["Should Your Next PC Be a Workstation?" *News and Trends*, October]. I have been an advocate of them for years. The most common question I get is, "What is the most stable, speedy, durable, quiet, and expandable PC with the highest-quality components?" I answer, "A workstation PC."

Sometimes those who asked my advice later tell me, "Well, I looked into the models you suggested, and they were just too expensive; I got more memory and a faster CPU for less money at the local big-box electronics store." Of course, over a three-year period they spend more time and money calling me for service than the price difference between the two PCs.

Naturally workstations aren't for everyone, but if you run heavy-duty apps like Photoshop, QuarkXPress, Illustrator, AutoCAD, or payroll software, these no-nonsense machines are a must-have.

Charlie Hubert, via the Internet

FREAKED OUT

I READ DAN TYNAN'S great article ["When Wi-Fi Won't Fly," *Gadget Freak*, October] just after a 5-hour telephone marathon with Linksys's product support in India. It had initially taken me 2 hours with them to get my wireless router running after the setup CD did not work, and then 3 hours trying to fix an extender problem and system crash. As a retired electrical engineer with lots of computer background, I kept thinking, "I should be able to do this." Oh, for some decent documentation like in the old days!

Steve Manchester, Limerick, Maine

READABILITY CHECK

IN YOUR GOOGLE Clip & Save Bonus foldout [October], you have produced the most useful one-page, two-sided reference for us users. This alone is well worth the yearly subscription cost.

Why did you ruin it by failing to check it for readability? The URL under the 12-icon box on the second page is in blue on a dark background, in small type. The end of the URL is not legible in the least.

Jerry W. Donovan, via the Internet

PC World welcomes letters to the editor. We reserve the right to edit for length and clarity. Send e-mail to letters@pcworld.com. ■

CORRECTIONS

IN NOVEMBER'S *Top 15 Notebook PCs*, the name of the number four desktop replacement should have been Dell Inspiron 8600.

In November's *Internet Tips*, the Web site for the Ebooks collection should have been liblio.org.

An *In Brief* item on page 27 of the October issue should have listed the compressed size of the Office 2003 Service Pack 1 as 21MB.

In October's "Stripped-Down Software Alternatives" chart (page 100), we should have said that the Quintessential Player can play any video or audio file format except QuickTime and Real.

PC World regrets the errors.



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IBM recommends Microsoft® Windows® XP Professional.



IBM ThinkPad R Series

GO with IBM Think Express Program

IBM Think Express models are designed, configured
and priced with small to medium-size businesses in mind

IBM rated #1 in tech support for desktops
and notebooks by PC Magazine readers.
PC Magazine 17th Annual Reader
Satisfaction Survey – July 14, 2004

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It makes managing wireless access easier from almost anywhere.

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\$53/mo for 36 months

SuccessLease for Small Business

¹CD or other component replacement, IBM may choose to perform service at the depot repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day service. **(10) Full-size keyboard:** As defined by ISO/IEC 15412. **(11) Thinness:** may vary at certain points on the system. **(12) Travel weight:** includes battery and optional travel bezel instead of standard optical drive in Ultrabay bay, if applicable; weight may vary due to vendor components, manufacturing process and options. **(13) Public network access limited:** Subscription may be required and fees may apply. **(19) SuccessLease:** SuccessLease program, rates and terms are provided by third-party financiers approved by IBM Global Financing to credit-qualified business customers installing in the U.S. Featured monthly lease payments based on prespecified end-of-lease purchase option; documentation fee and first month's payment due at lease signing; taxes are additional. Options cannot be leased separately. IBM and IBM Global Financing reserve the right to alter product offerings, specifications or financing terms at any time, without notice. **Trademarks:** The following are trademarks or registered trademarks of IBM Corporation: IBM, the IBM logo, Rapid Restore, Rescue and Recovery, ThinkPad, Ultrabay, UltraConnect and UltraNav. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Intel SpeedStep and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other company, product and service names may be trademarks or service marks of other companies.

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Visit www.ibm.com/pc/safecomputing periodically for the latest information on safe and effective computing.

Take a look at some of our latest models. And get connected.



Why IBM ThinkPad Notebooks?

To make IBM ThinkPad® notebooks even more valuable, each one featured here can give you the efficiency, productivity and edge you need and comes with all the following ThinkVantage™ Technologies:

IBM Active Protection System:

Butterfingers unite! Select IBM ThinkPad notebooks now include airbag-like technology to help protect your hard drive from some damage caused by drops and jolts.

NEW! Rescue and Recovery with Rapid Restore:

Lost your data because of a software crash or virus? Recover previously saved data in minutes with our one-button solution.

Access Connections:

Switch between wired and wireless connections.

Embedded Security Subsystem 2.0:¹

Hackers and thieves, beware. Our combined hardware and software solution is designed to protect user data and keep it private.

Access IBM:

Get the help you need, when you need it. One button on your ThinkPad notebook brings you a world of resources and assistance.

IBM ThinkPad R51

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 715 (1.50GHz)²
 - Intel® PRD/Wireless Network Connection 802.11b/g³
- Microsoft Windows XP Professional⁴
- 15" XGA TFT display (1024x768)
- 256MB DDR SDRAM⁵
- 40GB hard drive⁶
- Integrated Ethernet and modem
- IBM Ultrabay™ Enhanced CD-RW/DVD-ROM combo
- IBM UltraConnect™ Antenna for increased signal strength⁷
- 1-yr system/battery limited warranty⁸

NavCode 1836H7U-M419

THINK EXPRESS MODEL
PRICED AT:

\$1,449*

\$53/mo for 36 months
SuccessLease for Small Business¹⁹



IBM ThinkPad T42

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 1.50GHz
 - Intel® PRD/Wireless Connection 802.11b/g
- Microsoft Windows XP Professional
- 15" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500 graphics
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 1-yr system/battery limited warranty⁸

NavCode 2378DWU-M419

THINK EXPRESS MODEL
PRICED AT:

\$1,629

\$59/mo for 36 months
SuccessLease for Small Business
ServicePac Service Upgrade¹²:
3-yr Depot Repair #30L9192 **\$132**

IBM ThinkPad T42

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 735 (1.70GHz)
 - Intel® PRD/Wireless Network Connection 802.11b/g
- Microsoft Windows XP Professional
- 15" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500 graphics
- 512MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 1-yr system/battery limited warranty⁸

NavCode 2378FZU

THINK EXPRESS MODEL
PRICED AT:

\$1,899

\$62/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
4-yr Depot Repair #69P9195 **\$249**



IBM ThinkPad X40

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor LV 1.20GHz
 - Intel® PRO/Wireless Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- Intel Extreme Graphics 2
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM fullsize keyboard¹⁴
- 7.5hr Li-Ion battery¹⁵
- 1-yr system/battery limited warranty⁸

NavCode 23866GU-M419

THINK EXPRESS MODEL
PRICED AT:

\$1,699

\$61/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite Repair/9x5/Next Business Day
Response #30L9195 **\$243**

IBM ThinkPad X40 Solution Pack

IBM ThinkVantage Technologies:

- Longest standard battery life of any leading-brand notebook²¹

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor LV 1.20GHz
 - Intel® PRD/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- 7.5-hr Li-Ion battery
- 3-yr system/1-yr battery limited warranty⁸

Accessories Included:

- ThinkPad X4 UltraBase Dock
- IBM Ultrabay Slim CD-RW/DVD-ROM combo

NavCode 23826UU-M419

THINK EXPRESS MODEL
PRICED AT:

\$2,199

\$78/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
5-yr Onsite Repair/9x5/Next Business Day
Response #69P9200 **\$449**



(Monitor not included)

Why IBM ThinkCentre PCs?

Only IBM offers these features to protect your users, connect them, and keep them working. Each ThinkCentre™ desktop featured here can give them the efficiency, productivity and edge they need with the following ThinkVantage Technologies:

Rescue and Recovery with Rapid Restore:

Lost your data because of a software crash or virus? Recover previously saved data in minutes with our one-button solution.

Access IBM:

Get the help you need, when you need it. One button on your ThinkCentre desktop brings you a world of IBM resources and assistance.

ImageUltra™ Builder:

Need to roll out new systems? Image and copy your operating system across your network in a flash. (Order separately)

IBM ThinkCentre A50

System Features:

- Intel® Pentium® 4 Processor with HT Technology 3.0GHz
- Microsoft Windows XP Professional
- Tower form factor
- 256MB DDR PC3200⁵
- 40GB hard drive • CD-ROM
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium license
- 1-yr parts limited warranty with 1-yr limited onsite service¹⁷

NavCode 814821U-M419

THINK EXPRESS MODEL
PRICED AT:

\$649

\$25/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
2-yr Onsite Repair/9x5/Next Business
Day Response #54P1859 **\$75**

NavCode® Get the latest pricing and information fast. Use NavCode on the phone or on the Web.

***Availability:** All offers subject to availability. IBM reserves the right to alter product offerings and specifications at any time, without notice. IBM is not responsible for photographic or typographic errors. ***Pricing:** does not include tax or shipping and is subject to change without notice. Reseller prices may vary. **Warranty:** For a copy of applicable product warranties, write to: Warranty Information, P.D. Box 12195, RTP, NC 27709, Attn: Dept. JDJA/B203. IBM makes no representation or warranty regarding third-party products or services. **Footnotes:** (1) **Embedded security system:** requires software download. (2) **Mobile Processors:** Power management reduces processor speed when in battery mode. (3) **Wireless 11a, 11b and 11g:** based on IEEE 802.11a, 802.11b and 802.11g, respectively. An adapter with 11a/b, 11b/g or 11a/b/g can communicate on either or any of these listed formats respectively; the actual connection will be based on the access point to which it connects. (4) **Included software:** may differ from its retail version (if available) and may not include user manuals or all program functionality. License agreements may apply. (5) **Memory:** For PCs without a separate video card, memory supports both system and video. Accessible system memory is up to 64MB less than the amount stated, depending on video mode. (6) **Hard drive:** GB = billion bytes. Accessible capacity is less; up to 4GB is service partition. (7) **Wireless capability:** requires compatible wireless-enabled options, sold separately. (8) **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges. (12) **ServicePac services:** are available for machines normally used for business, professional or trade purposes, rather than personal, family or household purposes. Service period begins with the equipment date of purchase. Service levels are response-time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. For ThinkPad notebooks requiring LCD or other

IBM recommends Microsoft® Windows® XP Professional.



(Monitor not included)

IBM ThinkCentre A50 Ultra small form factor

System Features:

- Intel® Pentium® 4 Processor with HT Technology 3.0GHz
- Microsoft Windows XP Professional
- Ultra small form factor — 74% smaller than a standard IBM desktop¹⁶
- 256MB DDR PC3200
- 40GB hard drive CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Lotus SmartSuite Millennium license
- Gigabit-Ethernet Integrated
- 1-yr limited warranty with limited onsite service¹⁷

NavCode 809021U-M419

THINK EXPRESS MODEL
PRICED AT:

\$799

\$29/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/Next Business Day
Response #54P1861 **\$132**

IBM ThinkCentre A51p

(model not shown)

System Features:

- Intel® Pentium® 4 Processor 530 with HT Technology
 - Processor speed 3.0GHz
 - 800MHz FSB
- Microsoft Windows XP Professional
- Tower form factor
- 256MB DDR2 PC2-3200 • CD-ROM
- 40GB hard drive
- Gigabit Ethernet-integrated
- IBM Embedded Security Subsystem 2.0
- 1-yr parts limited warranty with 1-yr limited onsite service¹⁷

NavCode 842721U-M419

THINK EXPRESS MODEL
PRICED AT:

\$799

\$29/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/4-hr Response
#54P1862 **\$239**



IBM eServer BladeCenter

System Features:

- Flexible - full performance and manageability of traditional rack optimized platforms
- Infrastructure integration - help lower TCO and increase control
- Simplify - easy to deploy, easy to install, easy to manage
- HS20
 - Intel® Xeon™ 2.8GHz/533MHz FSB
 - 40GB IDE/2GB DDR2 PC2100
 - 3-year limited warranty
- BladeCenter Chassis
 - 7U rack mount chassis—up to 14 blades per chassis
 - 2000W power
 - Cisco Ethernet switch module

NavCode 86773EU

EXPRESS MODEL PRICED AT:

\$7,289

\$92/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/4 hr Response
HS20 #69P9517 **\$279**
BladeCenter Chassis 41L2736 **\$600**

IBM eServer xSeries 336

System Features:

- Leading performance with Intel's EM64T technology - 32 and 64bit simultaneous computing
- High Availability with redundant power and hot swap fans - Calibrated Vectored Cooling enables density and performance
- Simple Management with on board service processors and optional remote management support - take control of your server environment
- Intel Xeon 2.8GHz/800MHz FSB
- Two 73GB SCSI/2GB DDR2 PC3200

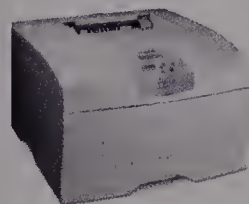
NavCode 88370EU

EXPRESS MODEL
PRICED AT:

\$3,349

\$119/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
4-yr Onsite/9x5/4-hr Response
#69P9243 **\$609**



The IBM Infoprint® 1412

System Features:

- Monochrome Laser/200 MHz processor
- Speed: Print up to 27 pages-per-minute (ppm)²⁰
- First page-out time as fast as 8 seconds²⁰
- Print quality: up to 2400 image quality
- 32MB of memory
- Parallel and USB attachment and 10/100 Base TX Fast Ethernet interfaces
- 1-yr limited warranty¹⁷

NavCode 75P5759

PRICED AT

BASE = **\$429**

NavCode 75P5760

NETWORK = **\$519**

250 Sheet Tray #75P6112 **\$92**

ServicePac Service Upgrade:
1-yr Onsite/9x5/Next Business Day
4-yr Response #29R5518 **\$47**

The Infoprint® 1422dn

System Features:

- Monochrome Laser/366 MHz processor
- Speed: Print up to 32 pages-per-minute (ppm)²⁰
- First page-out time as fast as 9 seconds²⁰
- Print quality: up to 2400 image quality
- Up to 64MB of memory
- Parallel and USB attachment and 10/100 Base TX Fast Ethernet interfaces
- Duplex capability
- 1-yr limited warranty¹⁷

NavCode 75P5984

PRICED AT:

\$799

\$29/mo for 36 months
SuccessLease for Small Business



IBM Think Express Program

We've designed and built our products specifically for medium businesses, and best of all they're available directly from IBM. Which select IBM Express Programs.

IBM ThinkPad Accessories

Belkin Components Universal Notebook Travel Surge Protector
#22P7127 **\$20**

Targus Wireless Optical Mouse
#22P7438 **\$27**

IBM ThinkPad Carrying Case™ - Expander
#73P3597 **\$59**

ThinkPad 72W AC/DC Combo Adapter
#22P9010 **\$99**

ThinkPad Port Replicator
#71P6783 **\$179**

IBM ThinkCentre Accessories

IBM UPS 500
#33L3477 **\$99**

IBM ThinkVision™ L150 15" Flat Panel Monitor
#W9SPAB1 **\$279**

IBM Server Accessories

IBM S2 42U Standard Rack Cabinet
#93074SX **\$1,489**

IBM Rackmount XLV 3000VA UPS
#930R30 **\$1,799**



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component replacement, IBM may choose to perform service at the depot repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day Service. (14) **Full-size keyboard:** As defined by ISO/IEC 15412. (15) **Battery:** These model numbers achieved the Ziff Davis Media, Inc.'s Business Winstone® 2002 BatteryMark™ Version 1.0 Battery Rundown Time of at least the time shown. This test was performed without independent verification by the VeriTest testing division of Lionbridge Technologies, Inc. ("VeriTest") or Ziff Davis Media, Inc.; neither Ziff Davis Media, Inc., nor VeriTest makes any representations or warranties as to these test results. Winstone is a registered trademark and BatteryMark is a trademark of Ziff Davis Publishing Holdings, Inc., in the U.S. and other countries. A description of the environment under which the test was performed is available at ibm.com/pc/www/thinkpad/batterylife. Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning and other customer preferences. (16) **Size claims:** are based on a comparison of chassis volume to the volume of IBM's standard desktop chassis. (17) **Systems with limited onsite service:** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by IBM. IBM will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by IBM for onsite replacement. For a list of onsite replaceable parts, contact IBM. Support unrelated to a warranty issue may be subject to additional charges. (18) **Certain IBM logo products:** are not manufactured, warranted or supported by IBM; IBM logos and trademarks used under license. Contact IBM for details. (19) **SuccessLease:** SuccessLease program, rates and terms are provided by third-party financiers approved by IBM Global Financing to credit-qualified business customers installing in the U.S. Featured monthly lease payments based on prespecified end-of-lease purchase option; documentation fee and first month's payment due at lease signing; taxes are additional. Options cannot be leased separately. IBM and IBM Global Financing reserve the right to alter product offerings, specifications or financing terms at any time, without notice. (20) **Print speed:** Exact speed varies depending on document complexity, system configuration, software application, driver and printer state. (21) **Battery Life:** Based on manufacturer's published figures or CNET.com results for the top 5 vendors in 2003 notebook sales based on IDC data as of 1/29/2004. **Trademarks:** The following are trademarks or registered trademarks of IBM Corporation: IBM, the IBM logo, ImageUltra, Lotus, NavCode, Rapid Restore, Rescue and Recovery, SmartSuite, ThinkCentre, ThinkPad, ThinkVantage, ThinkVision, UltraConnect, UltraBase, Ultrabay and UltraNav. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel, Intel Inside logo, Intel Centrino, Intel Centrino logo, Intel SpeedStep and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other company, product and service names may be trademarks or service marks of other companies. © 2004 IBM Corporation. All rights reserved. Visit www.ibm.com/pc/safecomputing periodically for the latest information on safe and effective computing.



● Branch Office

● Corporate Office

● Home Office

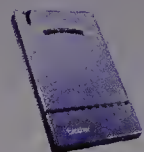
● Road-Warrior Office

● Small Workgroup Office

**Take cost out of your business and increase productivity.
No matter where you do business.**

The Brother Advantage

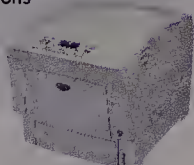
- *Comprehensive selection*
- *Increased productivity*
- *Lower acquisition costs*
- *Reduced consumable costs*
- *24/7/365 support and service*
- *Free evaluation program*



Mobile Solutions



Desktop Laser Solutions



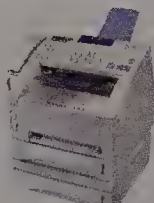
Color Laser Solutions



Network Printer Solutions



Multi-Function Solutions



Fax Solutions

Brother Printer, Fax and Multi-Function Center® models — designed to increase productivity while decreasing overhead.

Considering that over 94% of Fortune 1000 company employees work outside corporate headquarters*, equipping them with a cost-effective solution is, to say the least, a major challenge.

That's why Brother's Commercial Division is committed to providing superior and reliable imaging solutions that increase productivity while reducing costs. This enables businesses like yours to effectively address critical organizational goals and challenges.

But it is our product reliability, coupled with a responsive nationwide support and service network, that has companies like yours putting Brother at the top of their requisition lists.

Brother's Commercial Division welcomes the opportunity to put our resources to work for you. Contact us today so we can show you how we can positively impact your bottom line while enhancing your performance.

For more information, call 1-866-455-7713.

*Purchase Influence in Larger American Businesses (Erdos & Morgan, 2001).



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For more information visit our Web site at www.brother.com



PLUGGED IN

STEVE FOX

100GB Laptops and Other Tech Toys

Real-life Sims, tuneful shades, games in your hand, and a cheap IM gizmo.

1 100 Gigs for the Road

The Buzz: Remember when 20GB seemed huge for a road machine? In the coming months most of the major notebook vendors—including Dell and HP—will release laptops packing high-performance, 5400-rpm drives with a whopping 100GB capacity. We've seen notebook drives this large before, but those were slower, 4200-rpm models, which were not ideal for desktop replacements. If you don't want all that storage in one place, pick up a new Toshiba, which will divvy up the 100 gigs onto two drives.

Bottom Line: The 100GB mark is more a symbolic breakthrough than a technological one; but, oh, what a symbol.

2 Specs With Good Specs

The Buzz: You've got your sunglasses; you've got your portable audio. Now the stylin' folks at Oakley have merged the two into The Thump—an MP3 (and WMA/.wav) player that you wear on your face. With controls built into the frame and speakers mounted on adjustable booms by your ears, the ultralight (1.9-ounce) Thump is a marvel of geek-meets-chic design. It includes USB 2.0 support,

AT&T'S Ogo.



OAKLEY'S The Thump.

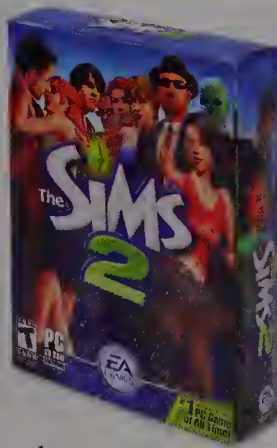
6 hours of battery life, and high-quality optics, though only the 256MB model (\$495) has polarized lenses; the 128MB version (\$395) doesn't.

Bottom Line: These shades aren't cheap, but regular electronics-free Oakley sunglasses can run you \$200 or more. Besides, looking cool just costs more.

3 Sims 2: Who Needs Real Life?

The Buzz: Television has reality programs. Gaming has The Sims. And with the recent release of Electronic Arts' The Sims 2, silicon reality takes a huge leap forward. Now the characters ("Sims") have memories, they pass down their DNA, and they even have aspirations (knowledge, family, popularity, romance, or fortune) that you help them fulfill. A cradle-to-grave simulation, Sims 2 even lets you make Sims movies. Won't Mom be proud?

Bottom Line: Why pay a "life coach" upward of \$400 when Sims 2 can teach you all you need to know about conflict resolution for a mere \$50?



4 Mobile iM for Less

The Buzz: Many handheld units are going the convergence route, folding e-mail, Web access, phone service, and computer functions into their offerings. AT&T Wireless is taking a different approach with the Ogo, a dedicat-

ed e-mail/IM/SMS device that hooks into services from AOL, MSN, and Yahoo (and handles POP3 e-mail from other ISPs). The product's stylish clamshell top hides

a BlackBerry-style QWERTY keyboard, a navigation pad, and a low-end color screen—a whole lotta device for \$99.

Bottom Line: Simple, useful, and cheap enough (at \$18 per month for unlimited e-mail and IM) to be an impulse purchase. One Ogo to go, please.

5 Sony Versus Nintendo...Again

The Buzz: The game wars are going handheld, with dueling releases from Nintendo and Sony. First out of the gate is the Nintendo DS, a \$150 dual-color-screen device with built-in voice recognition and touch-screen input. Available on November 21, the wireless (both Wi-Fi and proprietary) device supports multiplayer gaming and DS-to-DS chat. Sony's higher-end, Wi-Fi-connected PlayStation Portable should arrive at the end of March; pricing was unavailable at press time.

Bottom Line: The Nintendo DS gains the initial edge by virtue of timing and the sheer number of titles available (the device will support single-player Game Boy Advance games, too). But the Sony PSP's resemblance to the megapopular PlayStation 2 bodes well for its success. ■

Contributing Editor Steve Fox covers buzz-worthy products, ideas, and trends. Contact him at steve_fox@pcworld.com. Visit find.pcworld.com/31643 for more Plugged In.



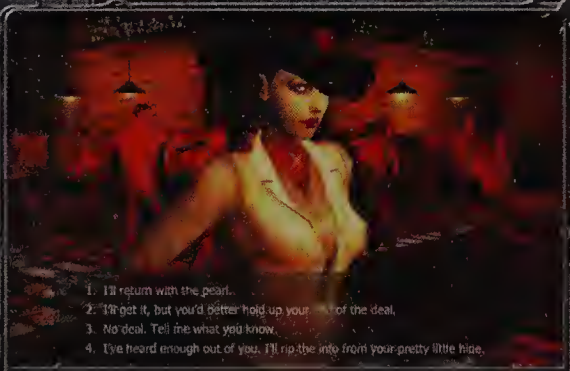
Choose to swear allegiance to 1 of 7 different clans, then use an array of vampire powers to complete quests and gain experience.



Witness the destructive power of your weapons, including guns, swords and supernatural vampire powers, in next-gen first-person and third-person gameplay.



Get sucked in to the streets of Los Angeles, where the options are endless and the dangers are boundless.



1. I'll return with the pearl.
2. I'll get it, but you'd better hold up your end of the deal.
3. No deal. Tell me what you know.
4. I've heard enough out of you. I'll rip the info from your pretty little hide.

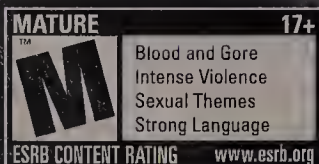
Interact with mortals and other vampires in a world that reacts to clan, gender and dialogue in this deep, immersive RPG.

VAMPIRE[®]

THE MASQUERADE

BLOODLINES[™]

"One of the most anticipated RPGs this year" —Gamespot



ACTIVISION[®]

activision.com

vampirebloodlines.com

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CONSUMER WATCH

ANNE KANDRA

**THE SECURITY OF DIGITAL
HEALTH RECORDS**

**PRIVACY WATCH: HACK-
ING BLUETOOTH PHONES**

**ON YOUR SIDE: FIGHT
CREDIT CARD FRAUD**

Trusting Your Health History to the Web

Digitized medical records can help save lives. But are they secure enough?



IT CAN BE DISCONCERTING, even a little scary, but it's not that unusual. You're at the hospital and the doctor, unable to find your medical records or perhaps unable to read the chicken scratches made by the medical professional who had them last, starts asking you what drugs you're taking or what tests you've undergone. It makes you wonder two things: What was the name of that medicine they gave me? And is this really the best way to share information?

Dr. Michael Oppenheim says it isn't. Oppenheim, chief medical information officer at North Shore Long Island Jewish

Health System, based in Great Neck, New York, is working hard to digitize all the records at the 17 hospitals in the system. Using electronic health records, he says, "means doctors won't be running to eight different places to get information, and that's a huge safety benefit for patients."

Currently, though, only about 13 percent of U.S. hospitals use electronic medical records, primarily because it costs so much to implement them. That will likely change, eventually: The Bush administration has announced a ten-year plan to bring the nation's paper-based health records system into the digital age.

You don't have to wait, though. Dozens of companies are eager to store and manage your health records for you electronically right now. And for plenty of folks—especially those with complicated medical histories, conditions that require special treatments, or other health concerns—it's an arrangement worth considering.

THE PRIVACY QUESTION

UNDERSTANDABLY, THE IDEA of letting an outside company manage such sensitive information as medical records makes some people uncomfortable. It's reasonable to wonder whether access to digitized medical data will enable your insurance company or employer to discriminate against you based on your health. And once the information goes digital, you have to worry about hackers getting their virtual hands on it.

Different services use different approaches to storing medical data, but most put you in charge of entering and managing your own records. That means you need to work closely with your doctor to ensure that the information you have is accurate. Some services let you print complete reports to take with you when you need them. Others create cards bearing the URL and log-in information for your online account; you keep the card in your wallet or purse so you (or your doctor) can call up the information online. Still others store data in a hardware device you can keep on a keychain. These medical keys—specialized versions of the flash memory drives that have replaced floppies for casual file storage—are designed to plug into any USB port, and they generate your medical record without ►

requiring additional software or tools.

One such device, the \$75 HealthKey, comes from a company called CapMed (www.capmed.com). You can choose to password-protect the information on the HealthKey or to make it more readily accessible in case of an emergency.

"Our customers like the fact that the system is desktop-based," says CapMed marketing associate Kelly Lim. "Many consumers aren't ready to store medical information online, and feel more comfortable storing it on their own PC."

Another company, Medinfochip (www.medinfochip.com), sells a similar USB device. A chip that stores a single profile costs \$70; you can store two separate histories for \$100.

A service called WebMD Health Manager (healthmanager.webmd.com; \$30 per year) is comprehensive and well organized; it's affiliated with consumer health

site WebMD.com. Health Manager stores your records online and provides a wealth of medical resources such as symptom trackers and assessment tools.

Followme.com (www.followme.com) offers both online and paper-based ways to manage medical records. Online subscribers set up a password-protected Internet account in which they can store everything from immunization records to family medical histories to summaries of office visits. The service costs \$35 per year for individuals, and \$75 for families.

MyNetRecord (www.mynetrecord.com) is an Australian-based company that stores records online for \$15 a year.

IS IT SAFE?

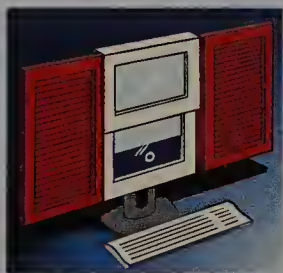
AS ALWAYS, SECURITY is paramount when it comes to entrusting your most sensitive personal information to an outside company. After all, it's one thing to

make potentially life-saving information more accessible to doctors, but quite another to leave yourself vulnerable to privacy infringement and possible employer or insurer discrimination.

These concerns are well founded. Every day brings new stories of medical information security breaches: In September, the Privacy Rights Clearinghouse, a consumer information and advocacy organization, filed suit in California against the Albertsons supermarket chain, charging that it had illegally sold customers' confidential prescription information to drug companies. And earlier this year, a hacker infiltrated a database at the Drexel University College of Medicine and gained access to the medical records of some 5500 neurosurgical patients before the university shut down the server.

So how can you be sure that a health records company will make your medical

PRIVACY WATCH



Cell Phones Get Chatty With Hackers

BY NEXT YEAR, RESEARCH firm IDC predicts, at least half of all new cell phone buyers will take home a Bluetooth-capable phone—one that lets the user wirelessly connect it to PCs or to

accessories such as headsets. But the networking feature may also give any nearby person who has a laptop and some specialized programs the ability to steal data from the phone or to eavesdrop on the user.

Earlier this year, two security researchers, Adam Laurie and Martin Herfurt, created a collection of hacks they call BlueSnarfing that enabled them to stealthily duplicate the address book, call records, photos, and text messages from certain phone models.

The development is particularly disturbing, Laurie says, because phones are increasingly being used to store sensitive information such as passwords and PIN numbers.

In one demonstration they call BlueBugging, the two researchers forced a targeted phone to call a phone of their own. That transforms the victim's phone into a bugging device, at least until the victim realizes that the phone is connected to another one.

In addition, criminals might use BlueBugging to commit fraud, Laurie says. For example, an attacker could force victims' phones to dial a phone service that bills per call or per minute. You wouldn't know that you'd been ripped off until you got your phone

bill—and then you'd have to convince your phone company that it wasn't you who called a psychic hotline 40 times.

Laurie, who is chief security officer and director of The Bunker Secure Hosting in southern England, says Bluetooth-enabled consumer electronics products complicate his job of protecting sensitive data. He notes that, because radio waves pass through walls, "you don't have to be visible to the person you're targeting."

One Bluetooth attack essentially turns your wireless phone into a bugging device.

Not all Bluetooth phones are susceptible to the attacks. The researchers haven't tested many different handsets, but the ones that they have checked out are among the most popular models, and Laurie estimates that 50 to 70 percent of Bluetooth phones are open to one or more BlueSnarfing attacks. (Visit find.pcworld.com/44318 for a complete list of vulnerable phone models.)

Nokia is reportedly working on a plan to fix the problem by updating the firmware in customers' phones, but it hasn't released details. Sony Ericsson spokesperson Peter Bodor says that customers can bring any of the company's at-risk handsets (the T610, T628, T630, and Z600 models share the same vulnerability) to any service center for a firmware update to fix the problem.

In the meantime, if you are not using your cell phone's Bluetooth feature, turn it off entirely. Not only will you protect your privacy, but you will prolong the phone's battery life, as well.

—Andrew Brandt

information easily available to the people who legitimately need it while keeping it strictly off limits to those who don't?

"Unfortunately, there's no easy answer," says Emily Stewart, a policy analyst at the Health Privacy Project, a consumer advocacy group based in Washington, D.C. "But a good place to start is to be active in maintaining your own medical records, and to inform yourself on how companies share information and who they share it with."

Most health record companies let users decide exactly what information they want to include when they set up their records, so if you're very concerned about privacy, consider sticking to the essentials. For example, you might want to limit the data to a list of current illnesses, allergies, and medications, along with emergency contact information. If you're unsure what details are most critical in an emergency, consult your doctor.

When comparing health record companies, consider how they store personal information. For example, you might be more comfortable using a company that allows you to keep data on your own PC rather than storing it on the company's servers—or you might prefer the accessibility of a Web-based service.

Here are some questions to ask any medical records company before you trust it with your personal information:

- Does the company's site have a clear, accessible listing of its privacy policy, terms and conditions of service, and company contacts (including e-mail, physical address, and phone number)? Steer clear if any of this information is missing or difficult to understand.
- Does the company share or disclose any of its customers' information? If so, what information could be disclosed, to whom, and for what purpose? Can any of the information be traced to you personally? The posted privacy policy should clearly explain how the company uses its customer information. Many companies share "aggregate" information that can't be linked to individuals; stay away from sites that don't specify what information they share or how they share it.
- How does the company protect its

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ON YOUR SIDE

Mysterious Credit Card Charge



SOMEHOW SKYPE, an Internet phone service, charged my credit card \$30.75. I had never even heard of Skype until I received my statement. When I sent an e-mail message to the address provided on the company's site, I got only an automated response that was no help. What do I do?

Joseph Benedetto, Cleveland
On Your Side responds: Skype spokesperson Kelly Larabee said that someone illegally acquired Benedetto's credit card number and used it to purchase Skype services.

His bank has agreed to reverse the charges.

If you have been a victim of online fraud, immediately contact the financial institution that issued your card. Most banks require that you challenge disputed charges within 60 days. For further protection against fraud, consider upgrading your credit card to one that offers a password system for online purchases. Examples include Verified by Visa (find.pcworld.com/44270) and MasterCard's SecureCode (find.pcworld.com/44272).

—Stephanie Layton

customers' information against hackers and others not authorized to access it? Make sure that the site uses SSL encryption during transactions (look for the closed lock symbol or for an "s" following "http" in the URL). The site should have

a security statement that explains how it safeguards confidential customer data.

- How easy is it to change information in your account? Obviously, you should be able to control your own records.
- Can you opt out of receiving newslet-

ters and other promotional materials? Before you register, determine whether the site sends third-party solicitations or other unrelated communications.

• If you decide to cancel your service, what happens to your information? You don't want your personal health history hanging around on some old server long after you've moved elsewhere.

Like shopping and banking online, entrusting your health records to a Web site or data keychain unit requires a leap of faith. But if you have a complicated health history, that leap could save your life. ■

Anne Kandra is a contributing editor, Andrew Brandt is a senior associate editor, and Stephanie Layton is an editorial assistant for PC World. You can send them e-mail at consumerwatch@pcworld.com. To read previously published Consumer Watch, Privacy Watch, or On Your Side columns, visit find.pcworld.com/31703, find.pcworld.com/31706, or find.pcworld.com/31709, respectively.

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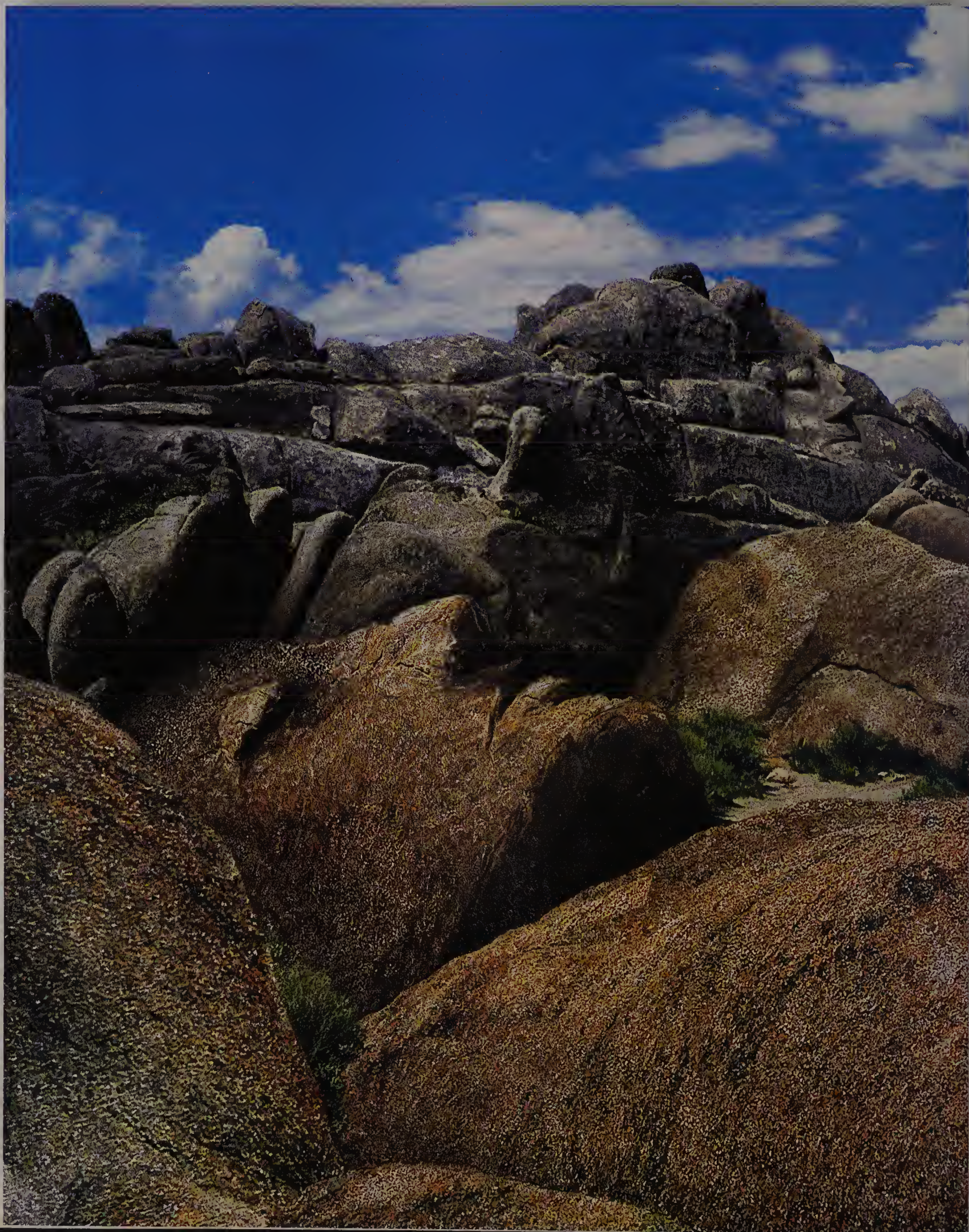
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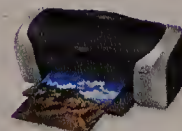
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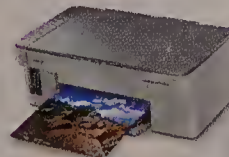
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HOME OFFICE

STEVE BASS

Get More Work Out of Your Day

Your next group project will be a snap with one of these cool new tools.

I BET YOU use e-mail all day long to swap files and information with clients and coworkers. How'd you ever live without it? But think of the time you waste waiting for people to reply or to send the file you need, like, right now. I spend way less time on the e-mail equivalent of hold since I started using a super-smart real-time collaboration tool.

I knew there had to be a better way to work with people remotely while I was writing my book, *PC Annoyances*. Coordinating the ten-person team was a logistical nightmare. Over four months we fired exactly 1 billion e-mail messages to and fro, chatted by phone, and shared tons of documents, PDF files, and images. We ended up with more than 70 different Word docs for the project, several of them very similar, or even exact duplicates. If only I knew then what I know now about Groove.

DEEP IN A GROOVE

THE FIRST TIME I saw Groove Networks' collaboration program was in 2001 at a user-group meeting—and believe me, I was underwhelmed. The tool was kludgy, awkward to use, and crash-prone. Fortunately, it has since become the Groove Virtual Office, a mature, robust, and indispensable workgroup product that far exceeds expectations. Visit find.pcworld.com/44276 to download the trial version.

Groove now has all the sharing tools I need, including file swapping, instant messaging, e-mail, and shared calendars. But what seals the deal for me is the program's ability to let two or more people work on a Word document at the same time. Sure, I can duplicate these functions with individual products, but

Groove gives me all of them in one secure package (it's closed to outsiders automatically). And then there's Groove's discussions feature, its forms tool for customiz-



ing documents, its project and meeting management, and its outlining tool.

Another thing in Groove's favor is ease of use: A bunch of us were up and running with the tool in minutes. And after just a day using Groove, I was having a simultaneous IM and voice chat with a buddy in Japan. The program worked like a charm right out of the chute, as we flung photos, documents, and files back and forth. Take it from me, Groove rocks.

Quick tip: No matter what collaborative tool you use, keep everyone's rights to a bare minimum at first, say, to read only. That way no one can accidentally delete all those cherished, newly edited files.

Groove's pricing is reasonable. You can buy one copy for \$70 (that's not a yearly fee, either) and use it on up to five of your own PCs (your pals have to buy their own copies). Other workgroup products, such as Intranets.com (\$60 per month for five users) and South River Technologies' GroupDrive.com (\$800 for ten users), require buying a set number of licenses.

(Both services also have trial versions.)

Groove does have two disadvantages, although neither of them will stop me from using the product. First, it isn't Web-based, so you have to install it on all your PCs. I can live with that; if you can't, try PopG (www.popg.net), a \$30-per-month service that runs a Groove account from a browser. The second problem may be tougher: There's no Mac version of Groove (though I generally try to avoid Mac users, often and early).

Dial-up Groove users sharing large files should change the download settings to manual, or limit downloads to files under 1MB or so. Open the Groove workspace, select *Files*, right-click the root folder, choose *Properties*, and select the *Downloads* tab.

LET'S COLLABORATE

I REALLY WANT you to try Groove. After you install the trial (as I said, visit find.pcworld.com/44276 to get it), click the invitation at find.pcworld.com/44298 to join "Steve's Spot," a Groove workspace. (No, I don't want to see pics of your grandkids.)

If you prefer something free, try Five Across's Web-based InterComm service, which lets you share files, work together on documents, forward e-mail notices, and chat. It's not as feature-laden as Groove, and it allows only one-to-one conversations in chat rather than Groove's one-to-many, but hey, it's a freebie. Browse to find.pcworld.com/44304 to download it.

Now if I could only get Groove to write a few book chapters, I'd be all set. ■

Contributing Editor Steve Bass is the author of PC Annoyances, published by O'Reilly. Contact him at homeoffice@pcworld.com.

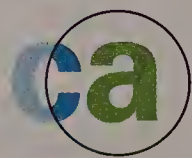


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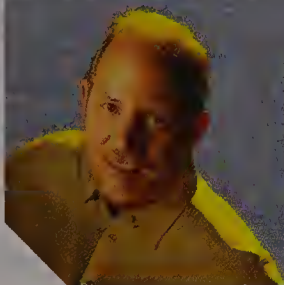


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Driver's Seat



BUGS & FIXES

STUART J. JOHNSTON

Stop Service Pack 2 From Leaking Data

Plus: Patch a security hole in JPEG images; Mozilla fixes flaws in its browser.



MICROSOFT has been making a big fuss over security lately, especially now that Service Pack 2 for Windows XP is out. But while SP2 locks the doors on many types of attacks, it can also open a window for prying eyes to peer through.

PC Welt, PC World's sibling publication in Germany (find.pcworld.com/44760), discov-

ered a flaw in SP2 that can expose all of your shared files and folders to people on the Web. For data to be exposed, says Andreas Kroschel, one of the PC Welt editors who discovered the glitch, SP2 must be installed on your system; Internet connection sharing (ICS) must be disabled; file sharing must be defined on your PC; sharing exceptions must be specified in Windows Firewall; and the affected system must have a dial-up,

DSL, or ISDN connection. (Due to the lack of cable modem service in Germany, PC Welt was unable to test the flaw under that connection.)

At press time, Microsoft had yet to acknowledge the flaw, though it is looking at PC Welt's claims. In the meantime, the magazine provides a workaround: For details, read

Security Tips columnist Andrew Brandt's blog at find.pcworld.com/44762.

POISONED PICTURES

MICROSOFT RELEASED a patch for a flaw that could let a cracker take over your PC by sending you an attack program hidden inside a JPEG (.jpg) file. Except on systems with Windows XP SP2 installed, the hole affects all programs—including IE, Outlook, and Paint—that can open .jpg files. Although the flawed software component was not included with earlier Windows operating systems (including 98, 98SE, and Me), it often installs automatically on those OSs when you install programs that read JPEGs.

If you open up an infected JPEG on a Web page or as an attachment, the attacker's hidden code could cause a buffer overflow error, crashing the software or forcing Windows to run a rogue program from whoever created the infected file. For Microsoft's patch, go to find.pcworld.com/44764. To figure out which Microsoft products need to be patched, visit find.pcworld.com/44766. For software made by others, contact those companies. ■

Stuart J. Johnston is a contributing editor for PC World. Visit find.pcworld.com/31580 to see more Bugs and Fixes columns.

IN BRIEF

Inkjet Refill Recall

NCR IS RECALLING about 78,000 inkjet refill kits (models 943264, 999289, and 999292) that were sold at Big Lots and Walgreens stores between April and June 2004. The refills lack child-resistant packaging and required warning labels. For an exchange or a refund, return them to the original store. For further info, hop over to find.pcworld.com/44772 or call NCR at 800/279-0203.

Talking Worm

THE AMUS-A WORM comes with a surprise: On Windows XP systems, it talks. The worm uses XP's speech engine to play a puerile message: "How are you. I am back. My name is Mister Hamsi. I am seeing you." The worm tries to delete Windows files and attempts to spread using your e-mail address book. Get info and virus updates from McAfee at find.pcworld.com/44774 or from Symantec at find.pcworld.com/44776.

BUGGED?

FOUND A hardware or software bug? Tell us about it via e-mail at bugs@pcworld.com.

MOZILLA PATCHES HOLES IN FIREFOX

AS INTEREST IN ALTERNATIVES to Internet Explorer blossoms, so does scrutiny of their security flaws. Mozilla released a new version of its open-source Firefox browser that fixes nine holes.

The vulnerabilities could let an attacker hide sneaky code inside a VCard (a virtual business card exchanged via e-mail); enable miscreants to send you their attack program hidden in a .bmp image; or let a bad guy block sites protected by the Secure Sockets Layer protocol, preventing you from accessing them.

Download the latest version of Mozilla, 1.7.3, at find.pcworld.com/44768 and Firefox, 0.9.3, at find.pcworld.com/44770.

PRESENTATIONS

Word Perfect

Use common sense when creating slides for world-class presentations.

ALL THE TERRIFIC, high-quality presentation equipment in the world can't make up for a bland presentation. So while projector vendors such as NEC can provide presenters with tools to dazzle and delight an audience, don't forget that what a presenter puts on the slides is crucial to maintaining interest in a business presentation.

And the most common mistake many presenters make, whether speaking before three people in a boardroom or 1,000 people in a hall, is to cram slides with words—often the same words they are speaking from the podium.

"Somehow, presenters feel that if they give the audience detailed bullet points of just about everything they're saying, they've done their job," notes Alan "Red" Gliss, a Miami-based business consultant. "In fact, all this does is take the audience's attention off the speaker, which is where it belonged, and fix it on the screen, where there is no additional value-add. After a while, the audience just tunes out, because people don't want to read a presentation any more than they want it to be read to them."

Instead of "punishing them with words" on the screen, Gliss recommends exploiting the projector medium to its fullest by taking advantage of its ability to entertain audiences as well as inform them.

"Adding in a bit of animation to a presentation today, even a short audio clip, is a great way of keeping the audience off guard and on their toes," he says. "Just don't overdo this kind of thing so that it becomes tedious."

As far as informing the audience through the projector medium, Gliss believes that a question posed in a slide refocuses the attention on the presenter, who presumably will provide the answer. Also, showing a few informational graphics that comple-

ment the presentation is far better than essentially repeating the same words being delivered onscreen.

"Mostly it's just common sense," Gliss says. "Just think of what works for you typically, and that's what probably works for your audience."

SMART TIPS

Matching a Projector to Your Needs



RON GILLIES, senior vice president and general manager of the Visual Systems Division of NEC Solutions America, Inc., offers some advice for choosing the right presentation solution.

There are so many portable projectors available, how do I determine what's best for my application? Your decision centers largely on two factors. First, what is the environment? And second, how sophisticated do you want your presentations—do you plan on using computer data only, video, HD, or DVD?

I'm a user who frequently travels and delivers presentations in boardrooms and meeting rooms. What projector would be appropriate? One requirement is a lightweight projector. Today "lightweight" does not mean light on performance. There are superb projectors that weigh less than 3 pounds, deliver brilliant images, and offer high resolution. These projectors are also highly versatile to accommodate the variety of conditions you confront on the road. NEC's LT10 lightweight projectors will meet these challenges.

I would like to hook up my projector to my network and present wirelessly. What projector would you suggest? You should consider a portable projector that features built-in wireless or wired networking capabilities, as well as extensive input options that provide freedom and flexibility along with conveniences like automated keystone correction. Of course, multilevel security is important with such networking capabilities. NEC's new LT245 and LT265 fit the bill here.

I am looking for a projector that can give me huge images at home. Any recommendations? NEC can transform your living room into the ultimate entertainment experience with large-screen displays that support HDTV, to satellite and cable TV, to DVDs, computers, and video games. NEC's Showcase Series™ HT1100 projector delivers larger-than-life images in a compact, 7-pound package.

■ To learn more about NEC large area display solutions, click now on www.necvisualsystems.com.

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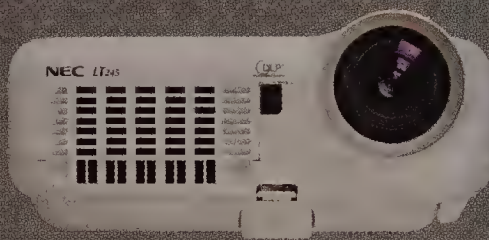


LT10 digital projector

\$1595

Ultimate mobility.

- Extremely lightweight only 2.1 lbs
- Easy set-up
- One-touch operation



LT245 digital projector

\$2195

High brightness.

- 802.11g wireless
- 2,200 lumens
- Project large images from short distances



LT265 digital projector

\$2495

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- XGA native resolution
- 2,500 lumens



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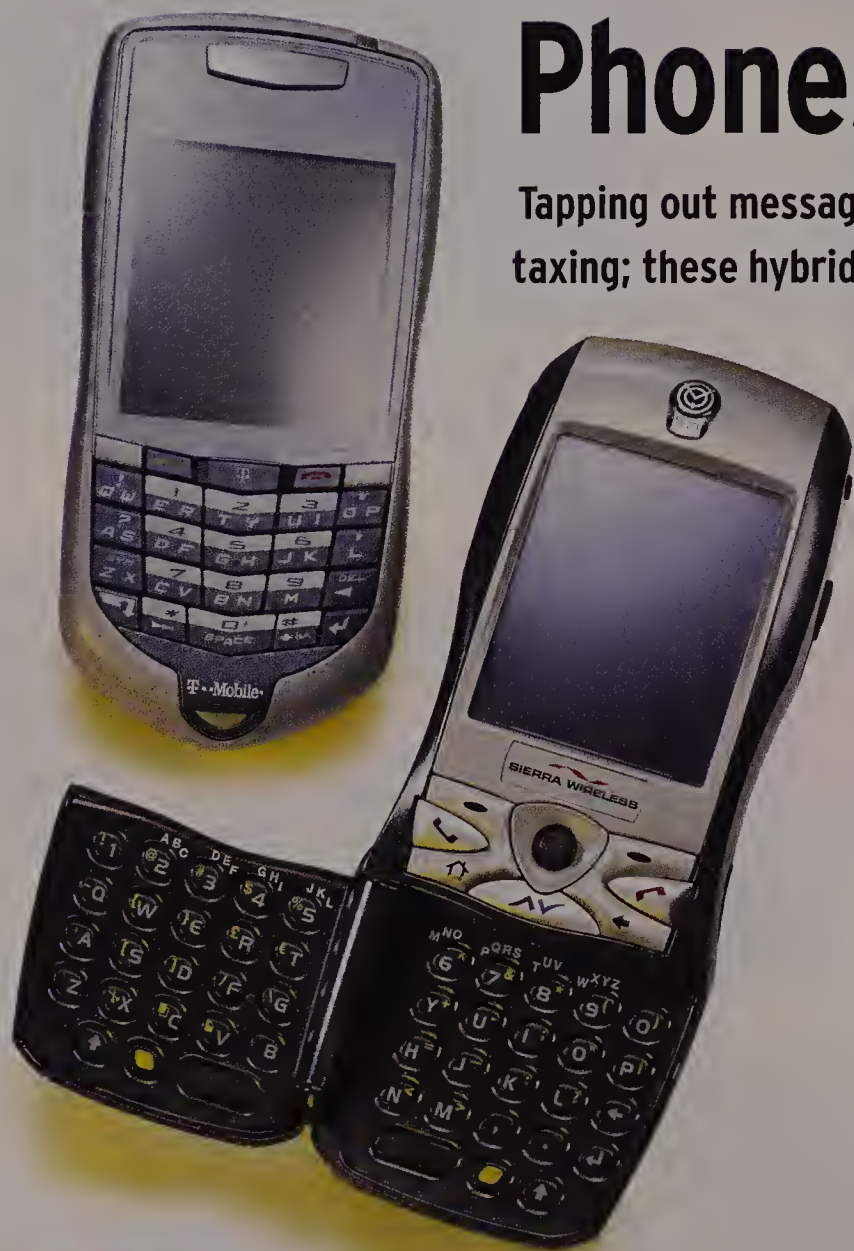
NEC

NEW PRODUCTS

EDITED BY TOM MAINELLI

Phones for E-Mail Fans

Tapping out messages on a cell phone can be taxing; these hybrids claim to make it easier.



CELL PHONES

FEW CELL PHONES make typing easy, but as more mobile professionals demand devices that let them type e-mail and text messages, vendors are rolling out a new generation of handsets designed to handle this task more effectively. We tried out two innovative efforts—Research In Motion's **BlackBerry 7100t** and Sierra

Wireless's **Voq Professional Phone**—and came away more impressed by the 7100t.

Wireless's **Voq Professional Phone**—and came away more impressed by the 7100t.

Both phones work on GSM/GPRS networks, and both of them promise to let you retrieve e-mail messages from Lotus Notes and Microsoft Ex-

change servers as well as from standard POP3 and IMAP accounts. The 7100t and the Voq also support SMS and MMS text messaging, along with the three most popular instant messaging services (AOL, Yahoo, and MSN). Battery life on both units seemed adequate—three or four days depending on usage. But otherwise, the two phones are quite different.

RIM'S NEW KEYBOARD

THE BLACKBERRY 7100t takes an alternative approach to text input. Unlike previous versions of RIM's popular handheld, the 7100t opts for a traditional phone keypad with eight extra keys, set as two additional columns—one on either side of the usual three columns (for 1 through 9, *,0, and #). The extra keys let RIM put two letters on most keys and one letter on a few others, instead of putting three or four letters on each key, as a standard handset does.

The letters are still laid out QWERTY-style for touch typing. But the experience feels counterintuitive at first: When

you press a key with two letters, how can the phone know which of them you intend? Amazingly, it did—most of the time. RIM's built-in SureType software uses a 35,000-word dictionary that seemed remarkably accurate.

Navigation was also simpler than expected, and we liked the bright, high-resolution (240 by 260) screen and its whimsical icons—a welcome upgrade from the faded-looking displays of BlackBerries past.

Out of the box, the 7100t syncs with mail from a BlackBerry Enterprise Server; or you can use the BlackBerry Internet Service to retrieve your e-mail from multiple accounts (including Outlook, POP3, IMAP, and Web-based Notes). Unfortunately, we were unable to use the BlackBerry Internet Service for our Lotus Notes accounts. RIM tells us that the service doesn't work for certain authentication setups or for mailboxes containing a large number of messages—and there's no way to know in advance whether your setup will work.

Instant messaging wasn't yet activated in our beta unit. Web browsing was sluggish, but no more so than on other

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GPS DEVICE

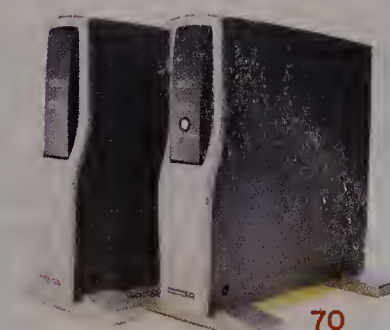
Cobra Electronics Nav One 3000

72 CONTACT MANAGEMENT

Best Software Act 2005

UTILITY SUITE

Iolo System Mechanic 5 Professional



cell phones. One other drawback: Few additional applications are available for RIM's proprietary operating system.

SIERRA'S PRICEY VOQ

THE VOQ IS larger, heavier, and, at \$499, far more expensive than the \$200 BlackBerry. At this writing, the Voq is available from relatively few resellers; you can't obtain it from a carrier—not even from AT&T, which will sell you service and the required SIM card.

To type on the Voq, you flip the cover on the bottom half of the phone (below a 2.5-inch, 176-by-220-pixel color display) sideways to reveal a usable but very small QWERTY keyboard similar to those included on most BlackBerries.

Because the Voq is based on the Windows Mobile 2003 for Smartphones OS (a slimmed-down version of Microsoft's latest OS for Pocket PCs), you can sync with your desktop Outlook contacts, calendar, and e-mail via Microsoft's ActiveSync PC software. We found setting up the inbox of our shipping unit to retrieve Lotus Notes mail via POP3 and IMAP4 relatively easy, but we ran into problems syncing Notes via virtual private network (requiring a \$99 upgrade to Sierra Wireless's VoqMail Pro). The e-mail sync eventu-

ally worked, but getting there took hours on the phone with a tech and our Notes guru.

We were able to send instant messages with Windows Mobile's MSN client. Supposedly the browser can handle AOL and Yahoo IM, too, but ours hung when we tried connecting to Yahoo's service.

After spending time with both units, we ended up preferring the BlackBerry 7100t.

It's a far better value than the clunkier Voq, and it's worth considering as an alternative to PalmOne's excellent but ex-

pensive Treo 600 if you don't need a full keyboard.

—Grace Aquino and
Yardena Arar

BlackBerry 7100t

Research In Motion

Preproduction model, not rated

Innovative text entry on

phonelike keypad plus affordable

price makes for a winning hybrid.

Street: \$200 (from T-Mobile)

find.pcworld.com/44852

Voq Professional Phone

Sierra Wireless

★★★★☆

High price and difficulty syncing

with Notes mail via VoqMail Pro

limit this device's appeal.

Street: \$499

find.pcworld.com/44854

OQO Handheld Disappoints

P D A
WHO WOULDN'T want a full-featured PC the size of a PDA? That's the promise of OQO's \$1999 **Model 01 Ultra PC** with Windows XP. Unfortunately, the Model 01 is better in concept than as a product.

I tested a preproduction unit using Windows XP Pro, with a 1-GHz Transmeta Crusoe CPU, 256MB of RAM, a 20GB hard drive, integrated 802.11b

Model 01 Ultra PC

OQO

Preproduction model, not rated

Handheld features Windows XP, but poor design and pedestrian performance make it impossible to recommend.

List: \$1999

find.pcworld.com/44842

Wi-Fi and Bluetooth, and a 5-inch-diagonal touch display.

The Model 01's performance was painfully slow. Applications took too long to load, and most Web pages that I visited refreshed at a snail's pace.

I could overlook the unit's unhurried performance if it were more comfortable to use. But I found some of the keyboard's key placements a bit odd, and the spacebar was difficult to reach. Add to those deficiencies a poorly located headphone

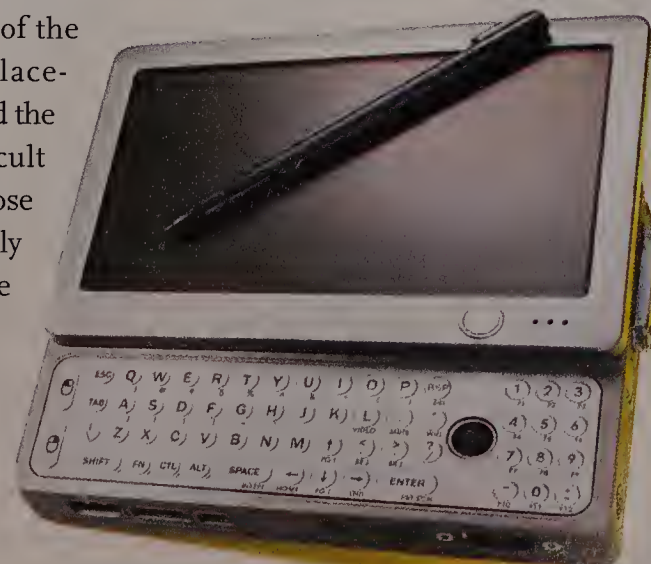
OQO'S MODEL 01

runs a full version of
Windows XP and
includes a touch
screen.

jack, noticeable heat, and erratic touch-screen performance, and you have a PDA that's awkward to use at best.

I like the idea of a handheld PC, and I would willingly sacrifice some comfort and performance to have one. But the Model 01 requires that I give up dramatically more than I'm willing to surrender.

—Tom Mainelli



Lavasoft Offers Worthy Ad-Aware Update

ANTI-SPYWARE

LAVASOFT'S Ad-Aware SE is one of PCWorld.com's most popular free downloads because Internet users know it's a good tool for detecting and removing spyware that infects their systems. So why pay \$27 for the Plus version? The reason: real-time protection.

I installed **Ad-Aware SE Plus**, version 1.05, on a Windows 98 PC and on a Windows XP machine (the installation process

automatically removes previous Ad-Aware versions).

After I completed installation, Ad-Aware SE Plus automatically connected to Lavasoft's servers and updated its spyware signatures. Then it offered to launch its first scan.

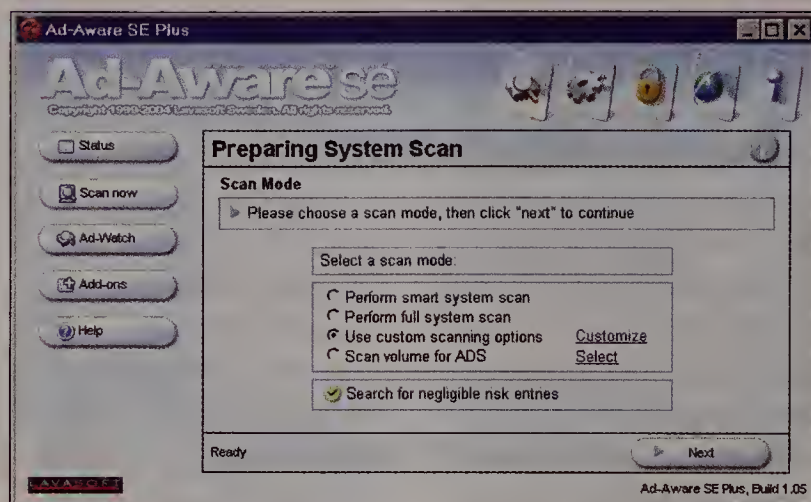
I've learned that selecting 'Use custom scanning options' and leaving things checked nets a far more comprehensive scan than the default 'Smart system scan' choice. In informal tests on the 98 and XP systems, I found that SE

Plus dug deeper than previous versions, subsequently finding and eliminating more spyware problems. (Note: During initial tests of version 1.02, *PC World* found several problems Lavasoft hotly disputed; the problems have been resolved.)

I'd prefer that the Ad-Watch real-time scanner be active by default, but finding the feature and turning it on from the main menu were easy. Ad-Watch stops severe attacks, as it detects (and interrupts) attempts to modify the Registry.

Free stuff is hard to resist, and the free Ad-Aware SE is a solid post-infection tool. But as spyware becomes more aggressive, I prefer real-time protection, and Ad-Aware SE Plus's Ad-Watch component is a defense measure that savvy users shouldn't be without.

—Rex Farrance



LAVASOFT AD-AWARE SE PLUS offers you a variety of scan modes for detecting spyware and adware on your computer.

Ad-Aware SE Plus

Lavasoft

★★★★☆

Affordable application provides system scanning plus real-time protection from spyware.

List: \$27

find.pcworld.com/44236

Dell's Good, Inexpensive Color Laser

PRINTER

INTERESTED in getting a networked color laser printer, but unwilling to spend a fortune? Dell's **Laser Printer 3000cn** is just \$449, and it offers good speed and quality.

The unit is easy to set up, and its LCD menu is fairly intuitive. It offers both a USB 2.0 port and a parallel port (cables not included) as well as built-in ethernet. The 3000cn has a resolution of 600 by 600

dpi, weighs in at 55 pounds, and measures 16.5 by 16.7 by 17 inches (this is definitely not a portable model).

It comes loaded with 64MB of RAM, which should be sufficient to handle most standard printing tasks (for \$150 you can easily upgrade the RAM to 512MB). The included paper tray holds up to 150 sheets; optional trays can take 250 (\$180) or 500 (\$230) sheets or handle duplexing (\$300). The 3000cn offers support for Printer Command Language but not for PostScript, and it is compatible with Windows 98 and up.

In our tests the printer did reasonably well: 17.9 pages per minute of text output and 3.4 ppm of color graphics output (it's rated to print 25 ppm and 5 ppm, respectively).



The print quality for text and basic graphics was quite satisfactory, but photos presented a mixed bag. One of our grayscale prints showed nice detail in light and dark cloth patterns, but the gradation of skin tones wasn't smooth in all cases, and the curve of a face had some jagged edges.

Color photos lost some of their detail, such as fine lines in clothing, but colors looked appealing overall.

Good performance and an excellent price make this printer a nice fit for a small or medium-size office on a tight budget.

—Anush Yeghazarian

DELL'S LASER PRINTER 3000cn offers color printing at a reasonable price.

Dell Laser Printer 3000cn

Dell

★★★★☆

A speedy printer with very good text and decent color output for a great price.

Street: \$449

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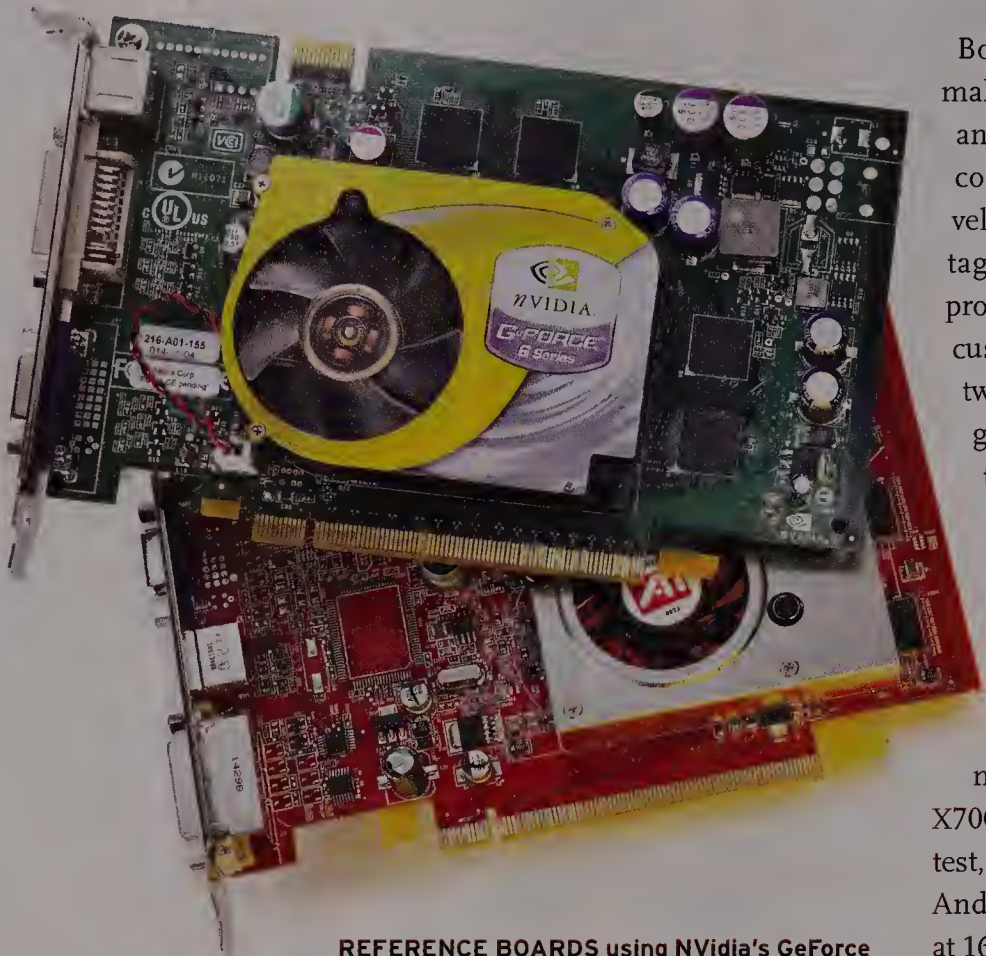
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Fujifilm means digital cameras.
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Graphics Face-Off: PCI Express Boards You Can Afford



REFERENCE BOARDS using NVidia's GeForce 6600 GT (top), and ATI's Radeon X700 XT.

GRAPHICS BOARDS

TO GET THE MOST bang from ultrarealistic-looking games such as Doom 3, Far Cry, and Half-Life 2 on a PCI Express-based PC, you want top-notch graphics hardware like ATI's Radeon X800 XT Platinum Edition or NVidia's GeForce 6800 Ultra. But if you don't have \$500 to drop on a graphics board, check out products that use one of the companies' new midrange graphics chips. They promise impressive performance for less than half the price of top-end boards.

We tested reference boards using ATI's new **Radeon X700 XT** chip and NVidia's **GeForce 6600 GT** chip. Each reference board had 128MB of memory, and for each we used the latest drivers (beta versions, in each case). Our test PCI Express-based boards performed well in the Intel Pentium 4 560 test

system we used; but in almost all of our early tests, NVidia's GeForce 6600 GT held the lead over ATI's Radeon X700 XT.

GAME ON

IN GAMES SUCH AS Doom 3 and Far Cry, the NVidia chip's lead was pronounced. When running Far Cry at 1600 by 1200 resolution, the 6600 GT posted 36 frames per second without antialiasing and 18 fps with it, while the X700 XT managed to crank out 23 fps and 10 fps, respectively.

When running Doom 3 at 1024 by 768 resolution without antialiasing, the 6600 GT managed an impressive 55 fps while the X700 XT clocked a more modest 40 fps. When we turned antialiasing on at the same resolution, the gap narrowed, with the 6600 GT dropping to 33 fps and the X700 XT slowing to 25 fps.

Both Doom 3 and Far Cry make extensive use of pixel and vertex shaders—bits of code that allow game developers to take full advantage of powerful graphics processors to create amazing custom effects. Hence those two games should provide a good indicator of how well these chips will handle future games.

The two chips turned in much closer marks when running slightly older games. For example, the 6600 GT managed 76 fps versus the X700 XT's 66 fps in our Halo test, at 1024 by 768 resolution. And in our Splinter Cell test, at 1600 by 1200 resolution and using the game's medium setting, the ATI board won, with 64 fps to the NVidia's 57 fps.

GOOD BUY

RETAIL BOARDS are expected to sell for about \$200, so this generation of mainstream graphics chips should turn out to be a good value. Though NVidia clearly had the early lead in our preliminary tests, we expect retail boards based on both companies' chips, with fully baked drivers, to perform even better.

Unfortunately, because both ATI and NVidia elected to build their mainstream chips for PCI Express-based systems first, owners of AGP systems are left waiting. NVidia says that GeForce 6600 AGP boards should be ready around the time you read this. ATI, for its part, has yet to announce any plans to

offer the X700 series of chips for AGP-based boards.

In the meantime, if you're the lucky owner of a PCI Express PC and you're ready for a graphics upgrade, you'll be hard-pressed to find a better deal than a \$200 board based on NVidia's GeForce 6600 GT.

—Eric Dahl

QUICK TAKES

MSN TV 2's Split Personality

MICROSOFT'S new \$200 **MSN TV 2 Internet & Media Player** doesn't know what it wants to be. On the one hand it's a television-based Internet appliance that lets PC-less folks surf the Internet; on the other it's a home networking device that allows networked users to access digital music, photos, and video stored on their PC through their TV. As a \$22-per-month dial-up device for newbies, it works reasonably well: It's easy to set up and use, though staring at your TV while Web pages slowly load isn't exactly a great



experience. For a home networking device that shares your existing broadband (for \$10 per month), it seems unduly complicated to use. find.pcworld.com/44914

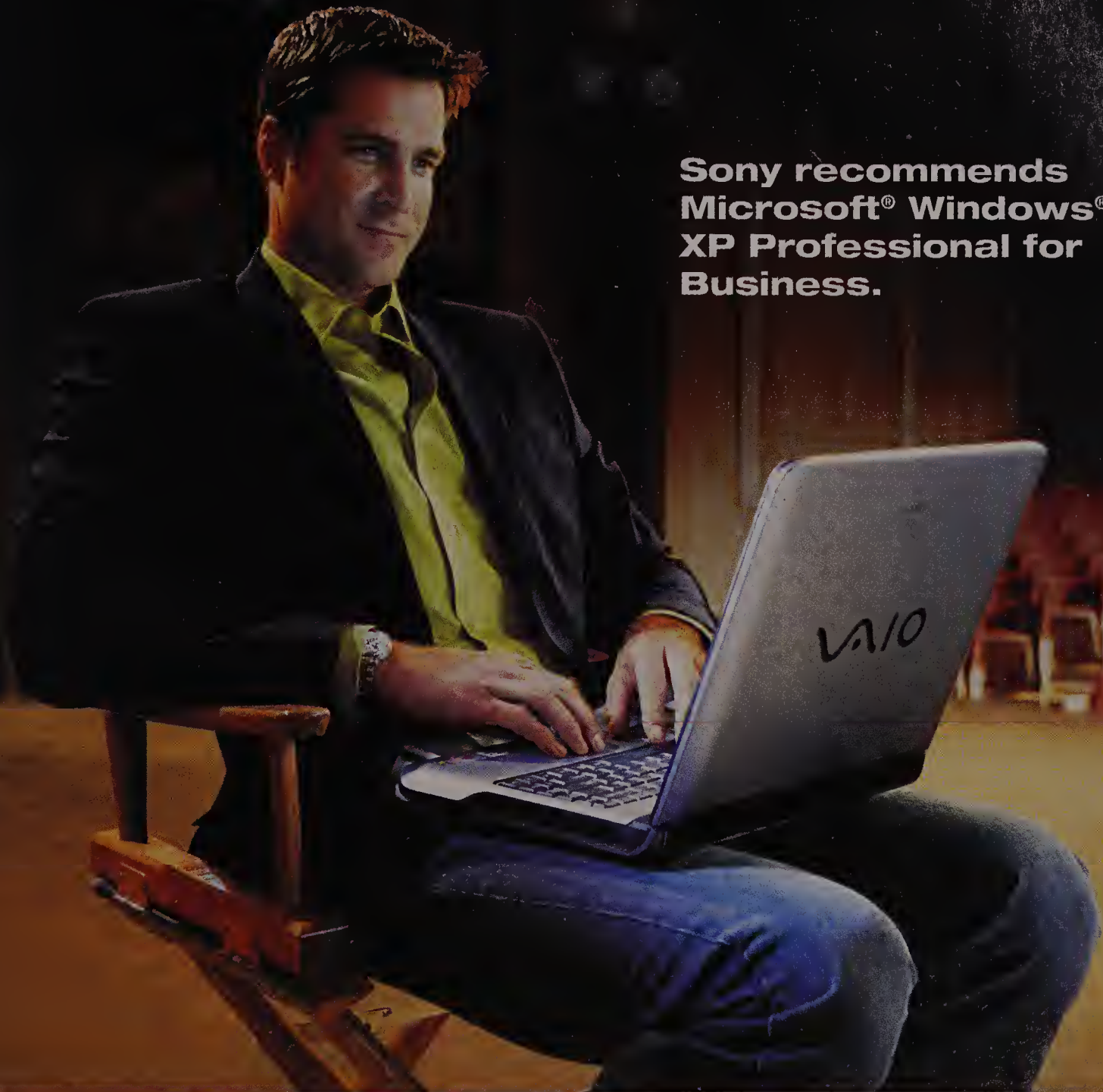
—Liane Cassavoy

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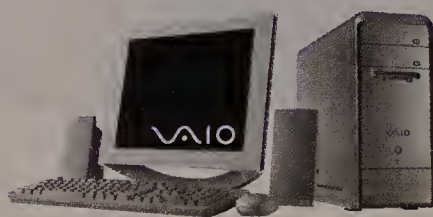
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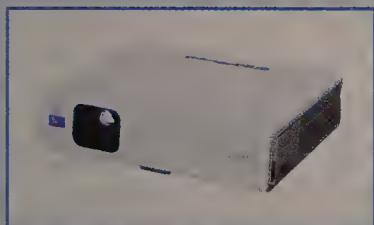
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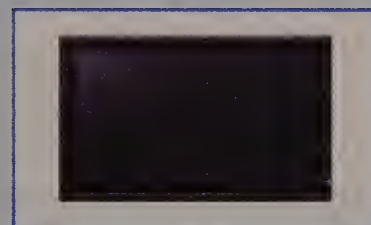
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Apple's Slim New iMac G5

DESKTOP

APPLE'S NEW **iMac G5** is all about the screen. The entire computer is built into the white monitor, which is only about 2 inches thick. It's a monument to modern design.

For the G5, Apple incorporates the same sleekly curved, brushed-aluminum base it

iMac G5

Apple

★★★★☆

Another high-style revamp from Apple; the new design looks great, but lacks adjustability.

Street: \$2053 as configured

find.pcworld.com/44780

uses in its current line of displays. But while the base looks great and offers a full range of tilting options, you can't adjust its height. And though I'm a little bit below average height, I found myself looking downward at the display—which means that most people will have to stack phone books to raise the screen.

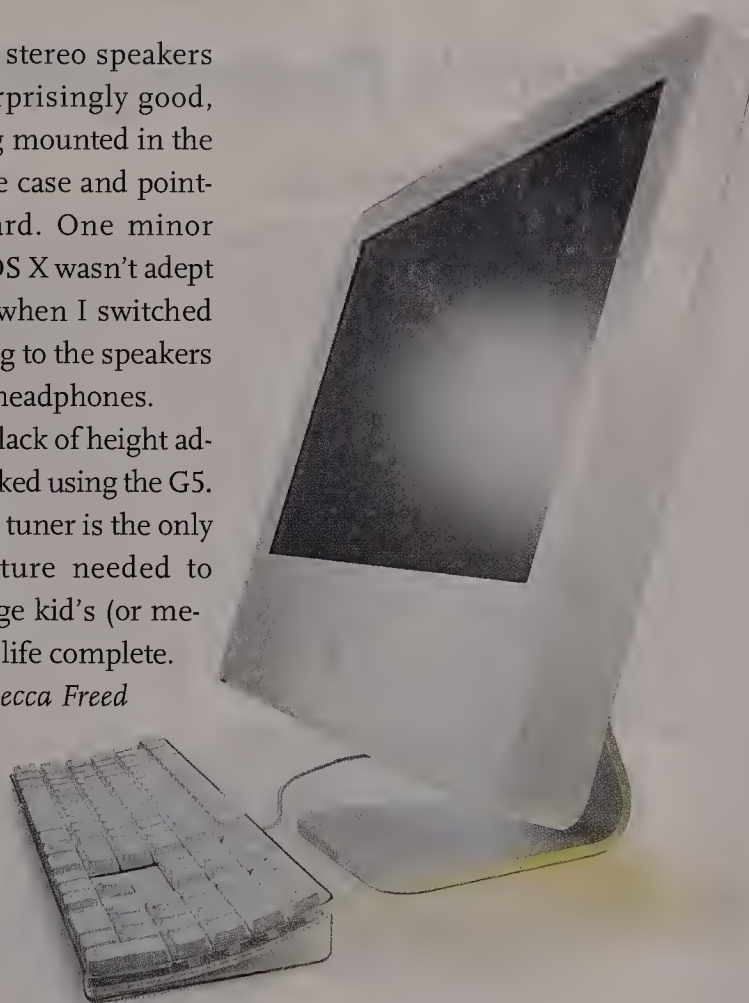
My review unit had a 1.8-GHz G5 processor, 512MB of RAM, a 160GB hard drive, and a combo DVD-ROM/CD-RW drive. It offered plenty of computing muscle: I was able to open and quickly switch among 11 applications.

The unit's stereo speakers sounded surprisingly good, despite being mounted in the bottom of the case and pointing downward. One minor annoyance: OS X wasn't adept at detecting when I switched from listening to the speakers to using the headphones.

Despite its lack of height adjustability, I liked using the G5. A built-in TV tuner is the only missing feature needed to make a college kid's (or media maven's) life complete.

—Rebecca Freed

APPLE'S
SLEEK iMAC G5 is all about the display.



Intuit Offers QuickBooks for Newbies

FINANCIAL SOFTWARE

IF YOU RUN a small business and haven't automated your books and records because you fear it's too complicated, the just-announced **QuickBooks 2005: Simple Start Edition** from Intuit could be for you.

I reviewed a beta version of the \$100 Simple Start desktop

software; a year's subscription to the online-only version is available for the same price. The online version offers the added benefit of automatic data backup on Intuit's servers; but to maintain access to the online version, you'll have to pay about \$10 per month after your first year is up.

Setup is fast and intuitive, and I finished the task in less than an hour. I liked Simple Start's user interface, which looks very much like an easy-to-understand flowchart. Even a nonaccountant can comprehend its basic concepts of "Money In" and "Money Out."

You can set up customers and create estimates and invoices. You can also create vendor accounts and track bill payments, although there's no online banking support. In addition, Simple Start provides rudimentary reports so you can monitor the bottom-line results of your business.

Intuit's target market for Simple Start is clearly service-based companies; goods-based businesses will probably find the application too limited. For example, you cannot keep track of products available for sale in inventory.

Some small businesses will chafe at the one-at-a-time user restriction and the program's lack of more-sophisticated financial reporting. However, the software does make it easy to migrate your data to a more powerful edition of QuickBooks down the road (\$199 buys QuickBooks Basic).

Intuit's latest creation has many limitations, but if you're still keeping business records using pencil and paper—or even an Excel spreadsheet—Simple Start could make your bookkeeping chores dramatically more palatable.

—Richard Morochove



QUICKBOOKS 2005: SIMPLE START EDITION offers an interface aimed at nonaccountants, focusing on "Money In" and "Money Out."

QuickBooks 2005: Simple Start Edition

Intuit

★★★★☆

Inexpensive and easy to use, it should satisfy many small businesses; advanced users may find it too limiting.

List: \$100

find.pcworld.com/44786

Canon's Photo-Friendly 8400F Scanner

SCANNER

CANON'S NEW \$150 **CanoScan 8400F** is a reliable, general-purpose scanner that includes slide and negative holders as well as technology to help you bring your old, damaged photos back to life.

The shipping 8400F I tested did a nice job of letting me return some of my favorite old photos to their former glory.

The scanner includes Canon's FARE (Film Automatic Retouching and Enhancement) Level 3 image retouching technology, which proved particularly adept at restoring sun-damaged prints.

Though the 8400F restored colors impressively, I wasn't as taken with the sharpness of its scans—especially of 35mm slides, both old and new. On-screen and printed, scanned images looked just a hair out of focus.

The USB 2.0-based 8400F's scans seemed quick—about 4 seconds for a preview and less than 45 seconds to create an 8.5-by-11-inch, 300-dpi image.

If you're in the market for a standard scanner and you'd like to do some photo restoration, the 8400F might be for you. If you're buying a scanner only to fix photos, however, I'd recommend choosing a higher-end product to ensure you get the results you want.

—Tracey Capen



CANON'S
CanoScan
8400F.

CanoScan 8400F

Canon

★★★★☆

Quick, inexpensive, and adept at restoring aging photos, but image focus seemed a hair off.

List: \$150

find.pcworld.com/44830

QUICK TAKES

Cobra's Near-Miss Portable Auto GPS



A BUILT-IN CAR navigation system isn't much help if you end up driving your friend's vehicle instead of your own. Cobra Electronics' \$1299 **Nav One 3000** lets you move it from one car to another, plus you can beam addresses to it from your PDA. Too bad that its large size and slow operation make it less desirable than competing products.

find.pcworld.com/44828

—Tracey Capen

Belkin's Wireless Video Goes Prime Time

MULTIMEDIA

WIRELESSLY TRANSMITTING high-quality video and audio throughout your home can be a convoluted technical feat—and one that often produces fuzzy results. Belkin's \$500 **PureAV RemoteTV** changes that, offering high-quality multimedia streaming that's a snap to set up. The catch: Belkin's technology may be in conflict with some copyright laws.

PureAV RemoteTV

Belkin

★★★★☆

Setup is easy, and the wireless works well; but it might conflict with some copyrights.

List: \$500

find.pcworld.com/44794

RemoteTV lets you take content from a cable box, a satellite receiver, a digital video recorder, or a DVD player and send it to a second TV. The package includes a transmitter and a receiver; and in my test of a preproduction RemoteTV system, I streamed the DVD of *Kill Bill, Volume 2* about 200 feet (and through several walls) to a second TV with no problems.

The playback quality was superb, although there is a downside to the setup: Whatever is being viewed in the first room trumps what anyone else wants to watch.

Because of copyright laws, a

person can't legally stream a DVD from one device to another over a network without a license from the DVD Copy Control Association. Belkin concedes that it has no such blessing from the DVDCCA,

STREAM
content from
room to room
with Belkin's
PureAV
RemoteTV.



PHOTOGRAPHS: RICK RIZNER

but it notes that RemoteTV's encryption prevents piracy.

Overall I found RemoteTV a good, easy-to-use product. Setting yourself up with a DVD player in each room may be cheaper, but if you like the idea of streaming all your content, it's a good option.

—Tom Spring

12X Super Multi Triple Format



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GSA-5120D

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Life without restrictions.

 **LG**
Life's Good

Act Speeds Up, Leaves Some Data Behind

CONTACT MANAGEMENT

Act 2005 is a major revamp of Best Software's venerable contact management software. Its new interface is largely an evo-

lutionary jump, but the new database underneath effectively makes this a 1.0 release. As a result, longtime fans may find that converting their data

to the new Act is tricky, and they'll definitely discover that some features are missing.

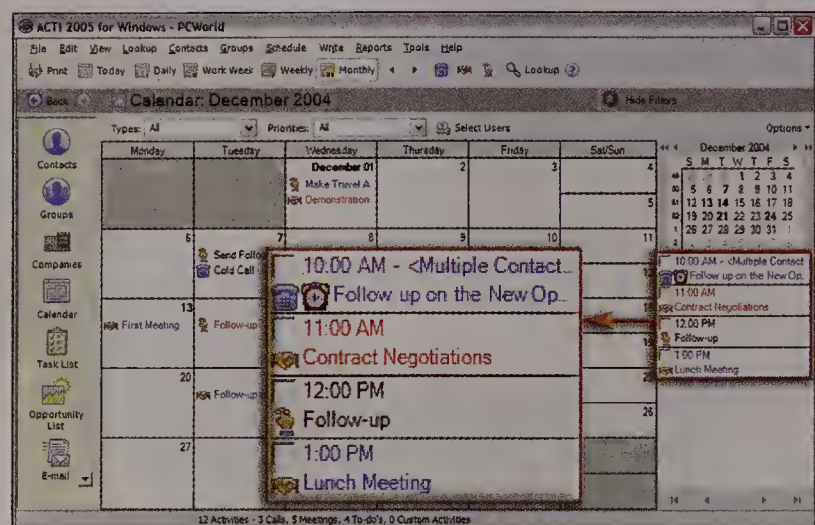
Act lets you consolidate all of your client information—from contact details to phone calls, e-mail, and in-person meeting notes—in one place. The problem with older versions was that, as you added more clients, the database slowed to a crawl. Act 2005 works with Microsoft's powerful SQL Server 2000 Desktop Edition database, so performance is no longer a problem.

The switch can cause problems for existing users, however, because some custom layouts and templates may fail

to map to the new database structure. I was able to import most data without issue, but I did find that I could no longer copy data from my Palm to Act (Best Software says that it will restore this feature in 2005).

Overall, Act 2005 proved a mixed bag. A faster database is good, but nagging issues concerning older files make it hard to fully recommend.

—Dennis O'Reilly



BEST SOFTWARE'S ACT 2005 contact manager features a spruced-up interface that prominently displays today's appointments.

ACT 2005

Best Software

★★★★☆

Better performance than previous versions; but moving old data in can be tricky, and some old features are missing. List: \$230 full; \$150 upgrade find.pcworld.com/44820

System Mechanic Gets Bigger, but Not Much Better

UTILITIES

IOLO TECHNOLOGIES' System Mechanic has been my go-to suite for cleaning and optimizing my PC for years. The latest version, the \$70 **System Mechanic 5 Professional**, has plenty of extras, but I'm not as enthusiastic about it as I was about earlier iterations.

And be forewarned: Follow setup instructions to the letter, or you run the risk of serious system problems. I ignored the warning to uninstall older versions and found myself

with an unbootable computer. My bad. So the second time around, I followed instructions more precisely and had no such problems.

The interface is far more intuitive than previous versions, with the various tools grouped logically in five categories (Clean, Fix, Maintain, Optimize, and Protect).

The suite's strongest features remain its registry repair and junk-file removal tools. Just be sure to back up your PC before using these or any other utilities in the suite.

In addition, the suite has powerful file-removal tools that, unlike the Windows Recycle Bin, delete files permanently. And it retains (and

improves upon) an outstanding set of tools for tweaking Windows settings.

New to the product is the Software Uninstaller Tool, which lets you remove any program—even if it doesn't have an included uninstaller. Also handy is the new Software Relocator Tool, which

moves applications to new locations while automatically updating all configuration data, links, and shortcuts. This tool can take some time to do its work, but it performs well.

One feature that I won't be using is the software's disk-defragmentation tool. Incredibly slow and system-resource-intensive, it failed to finish the job on my test PC, exhausting the Windows paging file before it could complete the job.

I won't be using all of System Mechanic 5 Professional's new tools. I can, however, recommend the reasonably priced suite as a good way to keep your computer clean and optimized.

—Ramon McLeod

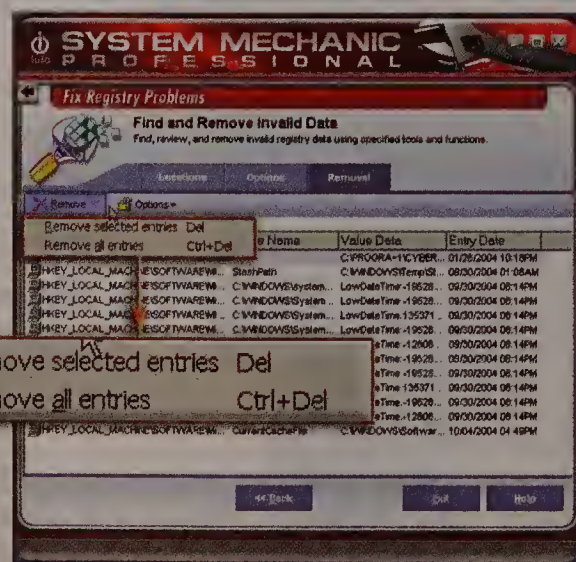
System Mechanic 5 Professional

IoLo

★★★★☆

Suite of utilities remains a great way to clean and optimize a PC, but follow instructions carefully. List: \$70

find.pcworld.com/44720



THE BEST TOOL in IoLo's System Mechanic 5 Professional remains its powerful Registry cleaner.

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SNAP

CHOOSE YOUR DIGITAL CAMERA
WISELY, AND DON'T SKIMP ON
GREAT BATTERIES.

Decisions

THERE ARE MANY WAYS TO CHOOSE THE DIGITAL CAMERA THAT is right for you. Unfortunately, many consumers get trapped by special deals and splashy promotions when they should be looking at the right mix of features to match the intended use.

On the other hand, unlike the advanced features that sometimes intimidate consumers shopping for fancy, pricey film cameras, the more sophisticated features found in digital cameras tend to be less forbidding and more intriguing to the new user who has already sampled the more basic functions.

The reason is simple: Digital camera features are very easy to access and use. They tend to be menu-driven, with easy instructions that pop up on the camera's LCD display. These features tend to be very practical, such as eliminating unwanted shots right on the spot, or compensating for variable conditions of lighting.

So if you're just starting out in digital photography, look for a camera that you can operate literally out of the box with nothing more complicated than insuring you have fresh battery power. In fact, any decent digital camera ought to give you this kind of point-and-click simplicity without ever causing you to search out advanced features.

And don't get hung up on "megapixel mania." The higher the megapixels, the sharper and clearer will be the image—in theory. But the fact is, most digital camera enthusiasts will shoot the vast majority of their photos on relative-



ly low pixel ratings, and still produce a near-film-quality photo. In fact when you consider cameras in the 5-plus-megapixel ranges, you are really looking at equipment best suited for advanced amateurs, even professionals.

Energizer™ batteries deliver the long-lasting results users want and need

Next to the camera itself, perhaps the most vital component of the digital photography environment is the batteries. If they run out of power or fail to operate properly under a wide variety of conditions, the camera doesn't work either.

That's why Energizer™ batteries (www.energizer.com) are the power plants of choice for digital camera lovers. Energizer™ batteries are not only long-lasting—up to seven times

longer-lasting in digital cameras than in ordinary alkaline batteries—but they also work well in a wide variety of conditions, including the kinds of extreme temperatures common in the dead of winter or on steamy, hot summer days.

For example, the Energizer™ e2™ Lithium AA battery can power your digital camera to shoot up to 600 photos, compared with about 80 photos with alkaline batteries, depending upon the camera used.

And the Energizer™ e2™ Lithium AAA battery—the world's first AAA Lithium battery—provides more lasting power than any other for digital cameras and a host of other digital devices, such as music and messaging gear. Compared with typical alkaline batteries, Energizer™ e2™ Lithium AAA batteries will deliver five hours more of digital music from an MP3 player; five hours of additional use in PDAs; and 160 hours more of paging messages.

Not only are the Energizer™ e2™ Lithium batteries longer-lasting, but they are also lightweight—up to 33% lighter than alkaline batteries. Moreover, these batteries are ideal for just about any high-tech, battery-powered device. They're also safe—free of both mercury and cadmium, with leak-resistant construction. And don't worry about storing your Energizer™ e2™ Lithium batteries. With a 15-year shelf life, they will still be ready to provide long-lasting power when you are ready to use them.

For more information on this superb lineup of Lithium batteries, click now on www.energizer.com.

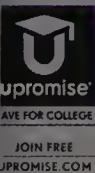


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*Vs. ordinary alkaline. Results vary by device.



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Keep Going™



Tech

What's New and What's Next

BY MICHAEL DESMOND

The products you use are about to get smarter, faster, smaller, cheaper, and more colorful. Here's your guide to what's ahead in PCs, software, mobile gadgets, home electronics, and more.

UPGRADING YOUR FUTURE PC could become child's play. You'll plug in building-block-like modules that pack anything from twin 64-bit processors to dual graphics boards. You'll gaze at stunning flat-panel monitors that display a wider range of colors than today's best LCDs, and you'll carry cell phones with 10GB hard drives.

Eventually, smarter technologies will turn most every car, wall, and appliance into an intelligent resource. The foundations for a truly connected future are being laid right now. Take a look in the following pages to see what the next two years will bring us. ►

PHOTOGRAPH (TOP LEFT): COURTESY OF SAMSUNG; PHOTOGRAPH (TOP RIGHT): COURTESY OF PANASONIC



2005



The Next PC

NEIL YOUNG WROTE that rust never sleeps. Well, neither do CPU makers. Intel and AMD have been working overtime to introduce dual-core processors that, by this time in 2006, will power most new PCs. Expected to emerge in the first half of 2005, dual-core processors squeeze two CPUs onto a single chip, turning everyday desktop and even laptop PCs into multiprocessing powerhouses.

Nathan Brookwood, principal analyst for industry research firm Insight 64, says dual-core CPUs will offer impressive performance gains under multiprocessor-aware operating systems such as Windows XP. The upside looks best for games, photo and video editing, and other processor-intensive tasks.

Just don't be too disappointed when the first dual-core processors show up with clock rates as much as one-third lower than those of their single-core siblings, says Brookwood. The lower clock rates will reduce heat, cost, and stress on the chips.

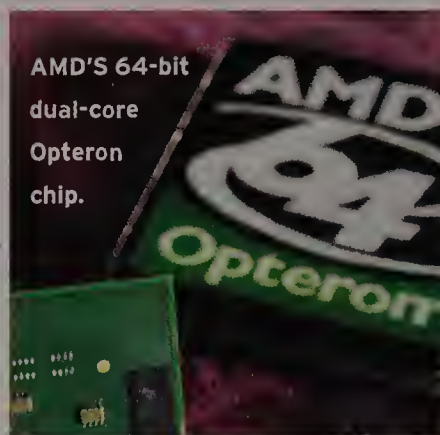
On the 64-bit front, Brookwood expects that two-thirds of all PCs in 2006 will feature 64-bit processors—though only 10 to 15 percent of those will ship with 64-bit applications. But with memory capacities on high-end PCs likely to reach 4GB or more in 2006, expect memory-hungry, hyperrealistic games and advanced photo and video editing to take full advantage of the 64-bit systems.

LEGO-LIKE PC?

FOR A GLIMPSE at the future of graphics, you need look no further than PCI Express (PCIe). It's the graphics interface that will replace PCI and AGP, and it promises nearly twice the performance of AGP. PCIe boards based on the

NVidia GeForce 6800 Ultra and ATI Radeon X80 chips have raised the bar for 3D graphics realism. Amping up graphics even more are boards using Scalable Link Interface technology, to let two boards work together—faster.

Guiding this development is an ambitious road map for PCIe. The so-called Gen 2 version of the spec is already on the drawing board and should double per-channel performance to 500 megabytes per second, and Brookwood expects a 1-gigabyte-per-second version down the road. That's serious speed.



PCIe could ultimately transform the shape of future PCs. An upcoming flavor of PCIe is being designed that will let fast peripherals connect to a PC over a cable (7 meters or

more), rather than plugging into the motherboard. Imagine a PC consisting of pluggable modules—for example, a small box for the graphics card, another box for the hard drive, and a third box for the wireless network card. Rather than opening the case to add devices, you just slide a PCIe module into a bay. By the end of 2006, who knows? You could be upgrading your next PC with Lego-like blocks—the ultimate no-hassle upgrade.

Splash of Color

WE'VE BEEN TEMPTED with visions of bendable displays for years. Alas, the promise of big and flexible organic light-emitting-diode and other foldable displays remains the stuff of lab demonstrations—not quite science fiction, but not quite technological reality, either. So companies, including Philips, Sony, Toshiba,

and a few startups, are instead ramping up the quality of tomorrow's flat screens.

Toshiba and Canon, for example, are cooking up thinner, lighter, and better flat panels, based on a technology called Surface Conduction Electron-Emitter Display, or SED (find.pcworld.com/45178). It shoots electrons through thousands of nanometers-wide slits onto a phosphor-coated screen, blending the best of traditional CRTs and LCDs. The Toshiba-Canon joint venture, SED Incorporated, will manufacture initial products by 2005, with volume production expected in 2007.

IN LIVING COLOR

GENOA COLOR takes a different approach in displaying colors on screen. Its Multi-Primary Color (MPC; find.pcworld.com/45180)

TOSHIBA'S prototype blends the best of CRT and LCD displays in a svelte flat panel.



When Everything Computes



ANANT AGARWAL, professor at MIT Research Labs, has been working on the Oxygen Project, in which "we are looking to create an environment with computation everywhere—in the walls of buildings, in your hands, everywhere," he says. "Computers can then attempt to assist people in a human-centric way."

Imagine a video wall installed in your family room that can act as a large television one instant, a videophone the next, and a Web browser after that. To make this kind of always-on, always-convenient future work, each object needs to be able to perform almost any computing task. The project's Raw Architecture Workstation (RAW) chip attempts to make such a capability a reality.

How soon will we be talking to walls, taking phone calls from refrigerators, and getting foreign-language translations from desk phones? Not yet, says Agarwal. Voice-operated kiosks with richer interfaces that go beyond today's machines "could be deployed in the next year or two. The longer-term ideas will take five to ten years," he says.

technology provides additional colors (such as yellow and cyan) that TVs can mix to display an expanded range of colors, including brighter versions of colors that RGB (red-green-blue) screens produce poorly. Using the MPC chip and up to three additional primary colors, TVs and monitors can deliver more-realistic color—particularly the flesh tones and yellows where the RGB method is weakest. MPC should appear in high-end rear-projection televisions in the second quarter of 2005.

Sony is taking another tack to meet a similar challenge, introducing in Japan the Qualia 005 line of 40- and 46-inch LCD TVs (find.pcworld.com/45182), which use white light-emitting diodes to backlight the screen. Called Triluminos, these LEDs let displays produce more colors than the cold cathode-based fluorescent lamps used in most LCD TVs. Jon Peddie, principal analyst for Jon Peddie Research, a leading graphics research firm, says the effect "is amazing and [provides] photographic color gamma." In short, colors on screen look true to life.

Photo Epiphany

THE POPULARITY OF digital photography is leading to a revolution in imaging software. Today, cameras can tag images with useful *metadata* (data about the image) such as the date and time a shot was taken, the camera model, and other details. Future cameras, equipped with GPS chips, will go further. "I could see a cell phone's camera putting in the GPS coordinates of an image, and software that automatically recognizes that the shot is in Paris," says Tapan Bhat, director of product management for Adobe's Consumer Digital Imaging and Digital Video Products division. He predicts such technology could surface in 2007.

Desktop software will be smarter, ►

too, able to analyze photos to recognize elements such as mountains, dogs, or swimming pools and then apply metatag information to aid organization.

Also likely by 2006 are software advancements that will automate routine tasks such as removing red-eye and fixing minor flaws, helping users get better results in less time. Further out, software could provide features like "lazy snapping," a technology Microsoft Research

recently demonstrated in China. With a few vague mouse strokes, users can, for example, identify an object they want to crop, and the lazy-snapping algorithms will automatically detect and mark the borders. The feature analyzes the image's contrast and colors to detect object edges with much greater precision than is possible with current magic-wand controls.

Microsoft Research also showed technology that can transform a 2D photo of

a face into a 3D model. The tool could allow you to import a realistic-looking model of yourself into a game.

Adobe's Bhat emphasizes that smart software will ultimately revolutionize the way we work with and even think of photos. But the payoffs remain years away. "The first [such features] will start hitting in 2006, but it may be fairly rudimentary. It's going to be a while before the technology is good enough to happen by default."

The Hold Everything Discs

IN THIS AGE OF HDTV and 300GB hard disks, the 4.7GB DVD disc just isn't getting the job done. The good news: Three groups are touting optical disc formats that offer four or five times the capacity of today's DVDs. But a format war is afoot, and no one knows how it will shake out.

The High Definition-DVD group (find.pcworld.com/45186), led by NEC and Toshiba, has created a 15GB format some analysts say will offer lower disc prices. NEC, Sanyo, and Toshiba plan to ship HD-DVD players in 2005, and recorders possibly in 2005 or 2006. NEC plans to ship an HD-DVD drive for PCs as well.

BLU-RAY OFFERINGS

THE COMPETING Blu-ray standard—headed up by Matsushita, Sony, and other PC and consumer electronics giants—stores 50GB on a disc (find.pcworld.com/45184). Blu-ray recorders (including

SONY'S BDZ-S77 Recorder (which sells in Japan) plays and records Blu-ray discs.

the LG Electronics LG-XBG420, Panasonic DMR-E700BD, and Sony BDZ-S77) are now available in Japan—albeit at prices above \$1000. Sony expects Blu-ray products to be available in the United States in late 2005 or early 2006. Nonrecording players—which could play any type of content stored on a Blu-ray disc—are expected by the end of 2005. Sony says its upcoming PlayStation 3 will come with a Blu-ray player.

HD-DVD and Blu-ray employ blue-laser optics, which use a much shorter wavelength to tightly pack bits of data on the disc surface. The problem is, blue-laser optics are expensive. So a third technology, called Digital Multilayer Disc (DMD; find.pcworld.com/45188), from D Data, has emerged. It uses low-cost red lasers and a transparent, fluorescing medium to store up to six layers of data within a disc.



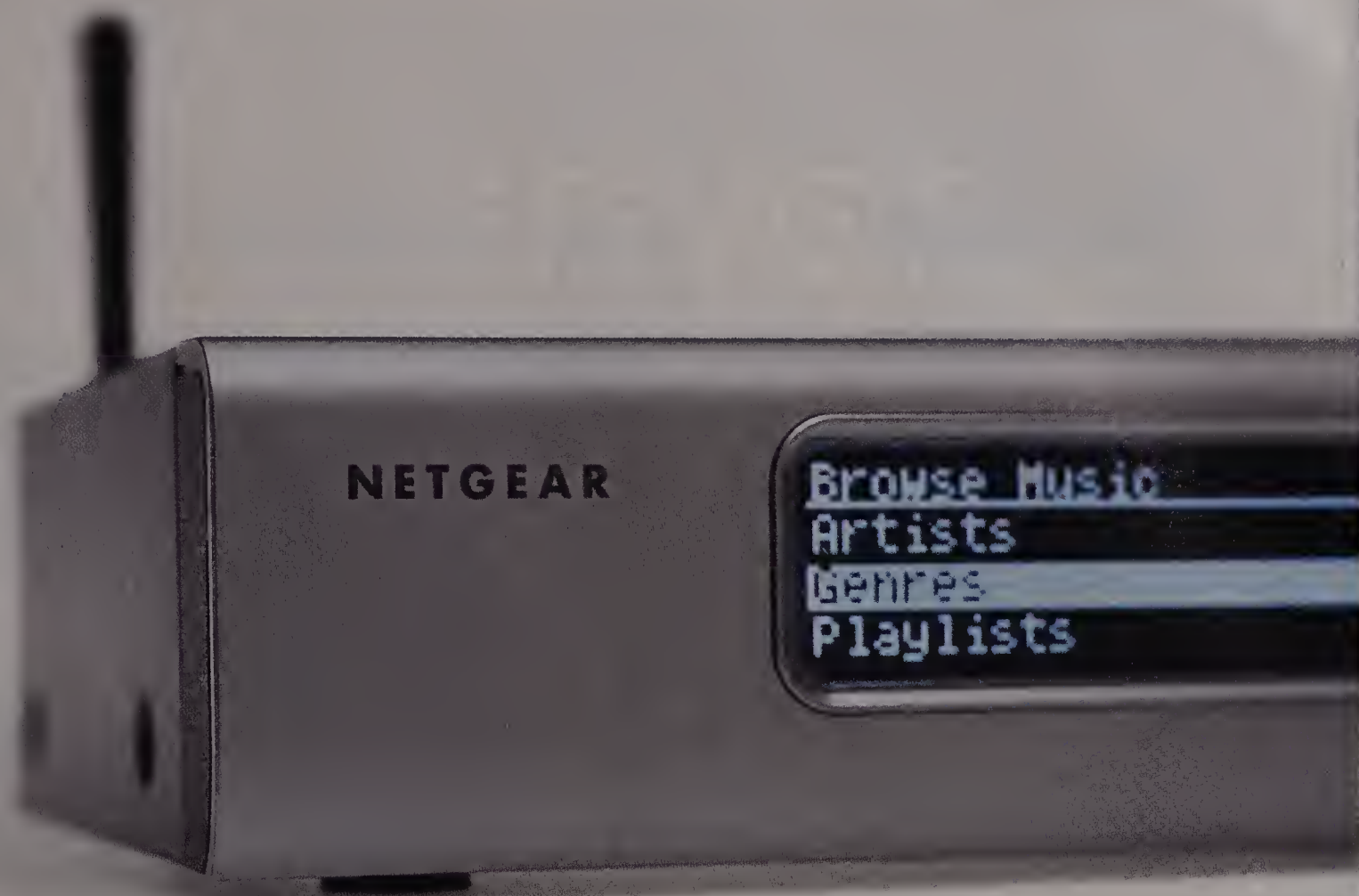
PANASONIC'S DMR-E700BD Blu-ray recorder is currently available only in Japan.

Instead of pointing a laser at a reflective surface layer, DMD interacts with fluorescing materials embedded in multiple layers to achieve initial capacities of 15GB. DMD promises lower-cost hardware and media than blue-laser-based formats. D Data plans on disc capacities doubling to 30GB in 2005 and doubling again to 60GB by 2007. However, DMD lacks the kind of industry support that's lined up behind Blu-ray and HD-DVD.

Don't expect quick victories in this format fight. By mid-2005, major Hollywood studios will likely take sides and force the issue. Blu-ray could hold an edge with Sony's large film libraries. HD-DVD has the imprimatur of the DVD Forum, the group that controls the spec for DVD.

In 2007, Sony expects to ship a four-layer Blu-ray disc that will hold 100GB of data, and has developed prototypes of an eight-layer, 200GB disc. Ultimately, recorders and drives that support both HD-DVD and Blu-ray may emerge. ►





WIRED

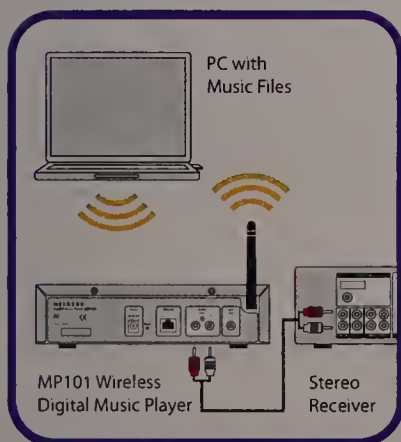
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- GATEWAYS
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Peskier Worms

IT'S A DANGEROUS WORLD, and it's only getting worse. By 2006, you can expect security threats to shift and grow. Johannes Ullrich, chief technology officer for the Internet Storm Center at the SANS Institute, expects the cat-and-mouse game between attackers and PC owners to continue, with next-generation hacks becoming more persistent and pernicious. Spyware, for example, will seed itself all over a victim's Windows Registry and hard disk, making it difficult for automated tools to pull out all the weeds. Ullrich also expects attacks to become more fault-tolerant. An attack could employ two or more programs that monitor each other to ensure that the infection is not rooted out of the system by antivirus software.

SPREADING TO HANDHELDS

THIS PAST SUMMER, the first virus infecting Pocket PCs and cell phones emerged, including a variation that uses Bluetooth connections to jump among handsets. It is only the first salvo, says Ullrich, in a barrage that will target devices of all stripes. "Everything that uses an IP address will be a target," he warns.

Chip makers and OS writers are fighting back, trying to close one of the most exploited holes: the buffer overrun. Viruses often create overruns by flooding a PC with more code or data than expected, leaving the excess code in an unprotected space on that system where it can execute. So AMD's Athlon 64 processor includes an NX bit, which flags code for execution. Combined with an NX bit-aware OS—such as Windows XP with SP2—this feature sterilizes miscreant code that overflows programming boundaries by leaving it untagged. Desktops with this CPU enjoy the functionality today. But Ullrich worries that network routers and mobile devices will not provide buffer overrun protection for some time. ►

TECH VISIONARY

The Nearly Invisible Battery



LARRY DUBOIS, vice president of physical sciences at SRI International, a nonprofit organization that develops new technologies, says batteries made of paper and other fibers could help devices get more from less.

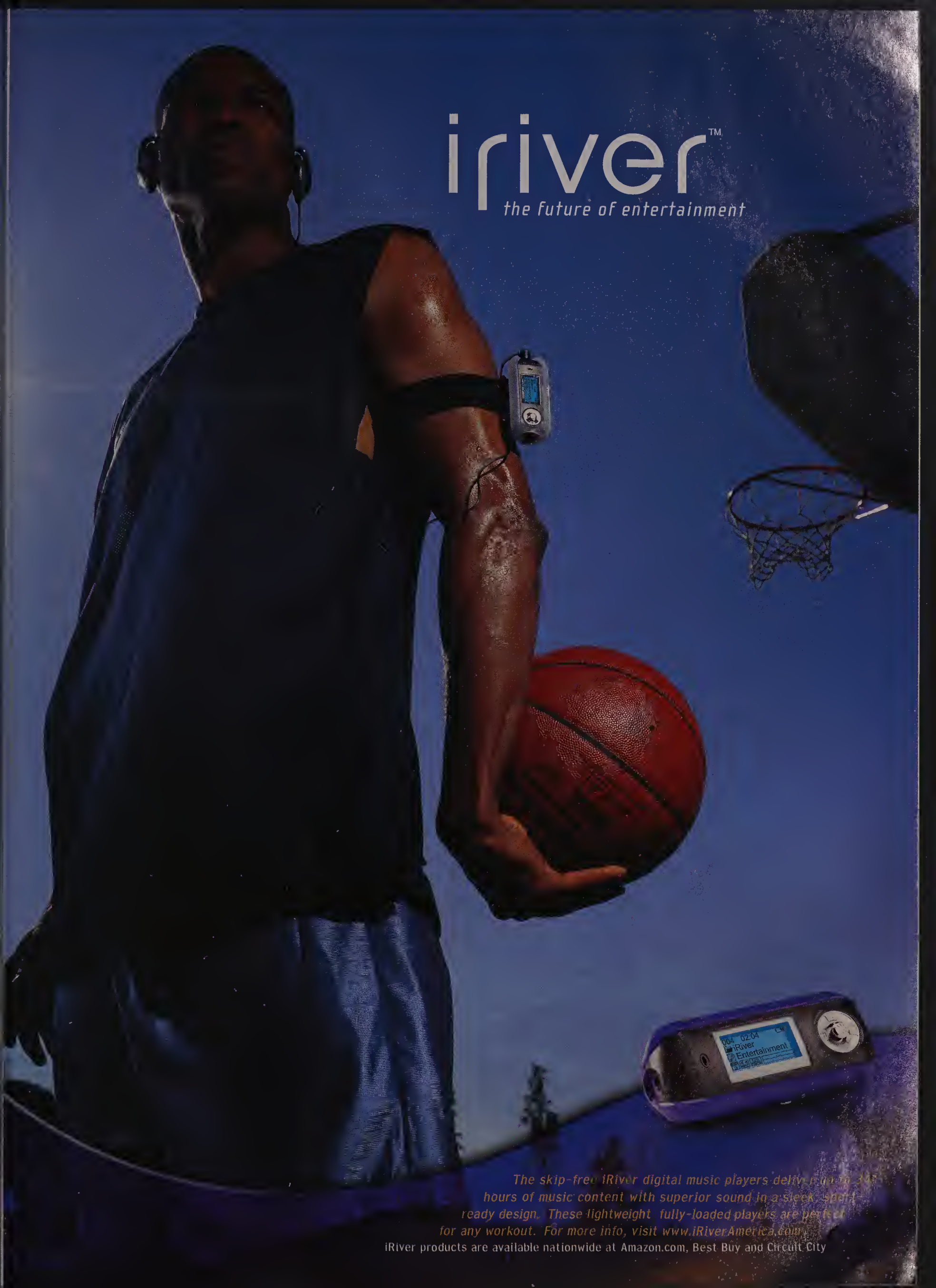
"You make miles of fiber [battery material], and when you mold the case [of your device], you embed that in the molding," Dubois explains. "You can make your device smaller or lighter, because you don't have to carry around the weight of the [battery casing]." There are also paper-thin, printable batteries that are being used for everything from Radio Frequency Identification (RFID) transmitters (which use tiny chips to track items at a distance) to greeting cards.

Another promising technology is a fast-charging battery that can go from zero to fully charged in less than 10 minutes. "It's a question now of moving the technology out of the lab to the manufacturing arena," Dubois says. "It's probably a couple of years out."

What about the fuel cells that we've been hearing about for gadgets? "[They're] real. People use them. The question is, when does it get into consumers' hands? Until you can buy methanol cartridges all over the country and all over the world, people are going to be hard-pressed to put fuel cells in their systems."

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Super Cell Phones

HAS ANY PRODUCT evolved as quickly as the cell phone? Three years ago, flip phones were cool. Today, a flip phone is also a digital camera, an e-mail device, and a PDA. With major service providers, including AT&T Wireless and Verizon Wireless, finally rolling out 3G service, cell phones are poised to become the ultimate do-it-all devices.

"[Mobile phones] will be more powerful, have better screens, provide longer battery life, and push more features," says Andy Abramson, an industry watcher who publishes a popular blog on Voice over Internet Protocol (VoIP) telephony. Expect to see phones that capture multimegapixel photos (such as Samsung's SPH-S2300, shown below); stream TV and feature-length videos (at smoother frame rates than what's available today); and play realistic 3D games, thanks to graphics chips like the NVIDIA GeForce 3D 4500 that have introduced 3D acceleration and texture mapping to mobile handsets.

BIGGER STORAGE

CELL PHONES equipped with tiny, 1-inch drives aren't far off, either. The first such phone, Samsung's SPH-V5400 with a 1.5GB drive, will be available in Korea soon, and analyst Jon Peddie expects that cell phones packing hard drives will appear in the United States in 2005. Drive capacities could go as high as

10GB, allowing users to store lots of MP3s, high-resolution images, and movies.

Shrinking chip sizes and costs will enable multiprotocol cell phones that can switch between digital cellular networks and local area Wi-Fi—and, later, wide area 802.16e WiMax and perhaps 802.20 networks. These new types of networks are designed to provide data rates of up to 1 mbps at ranges of 8 miles or more. Hybrid cellular/VoIP handsets, such as the Motorola CN620 Wi-Fi phone, will know what network is available, and will make the best choice to place the call at the lowest price, Abramson says. The bottleneck now: Carriers must work through complicated billing and network transfer issues for these agile devices.

Your cell phone will even take to the skies. Airbus recently completed tests of an onboard base station, called a picocell, that will enable cell phone users to make reliable in-flight connections with base stations that are located on the ground.



THE SAMSUNG SPH-V5400 has a 1.5GB hard drive.

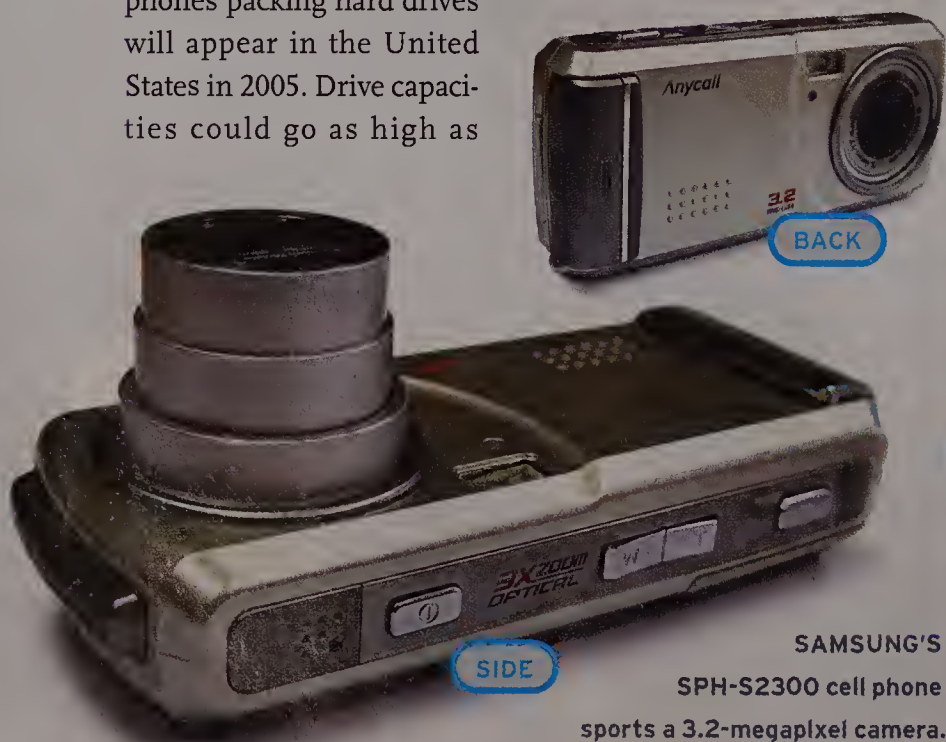
Of course, none of this will work without service providers getting a chance to charge for their piece of the action. Multiplayer online gaming will have users battling head-to-head over fast networks. In 2005, cell phones will become the largest user of GPS chips of any device. Integrated GPS chips already let some mobile

phone users check their handset for directions, but users can expect more location-based services—and, alas, advertising.

Smarter Appliance

EVERY YEAR, home automation seems poised to take off. And every year, tech-savvy home owners are unimpressed by the poor performance and reliability of products based on the aging X10 standard (which was developed by X10 USA, the company responsible for making those tiny surveillance cameras, and for delivering a host of annoying pop-up ads to promote them). X10 devices send signals to each other over a power line, but users complain that some devices don't function well together and that simple things like flipping a light switch can produce sluggish or inconsistent results.

In 2005, a protocol called Insteon should help change that. Insteon supports both wireless RF (radio frequency) and power-line operation, and promises to be more reliable than existing options. Backward compatible with X10 gear, Insteon could help renew en-



SAMSUNG'S SPH-S2300 cell phone sports a 3.2-megapixel camera.

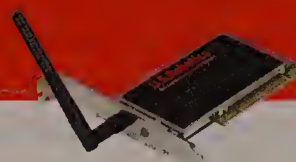


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thusiasm for home automation.

Ken Fairbanks, director of sales for Smarthome (find. pcworld.com/45190), a company that develops Insteon-based products (such as transceivers and touchscreens), envisions a growing market for Insteon. Smarthome's products will tell, for example, if a bathroom light switch in an elderly parent's home hasn't turned on by 10 a.m., perhaps indicating he or she is ill. It



SMARTHOME'S equipment allows you to control your house.

can then alert family members. Insteon's competitors include Zensys's Z-Wave and the Zig-Bee Alliance, both of which offer wireless automation. The Zig-Bee group, made up of nearly 100 companies—including Mitsubishi, Motorola, Philips, and Samsung—could deliver home-automation kits using the standard in 2006.

Kitchen tools are getting smarter, too.

Ted Selker, director of the Context Aware Computing Group at the Massachusetts Institute of Technology Media Lab, is working on a spoon that measures and reports the thickness and makeup of a mixture to help guide you through a recipe. Another project: A plastic food container that keeps track of how many days the contents have been in the fridge.

Selker also envisions homes in which kitchen tables, family-room walls, and other surfaces become virtual workspaces. The kids' homework and parents' bills will be called up on these surfaces.

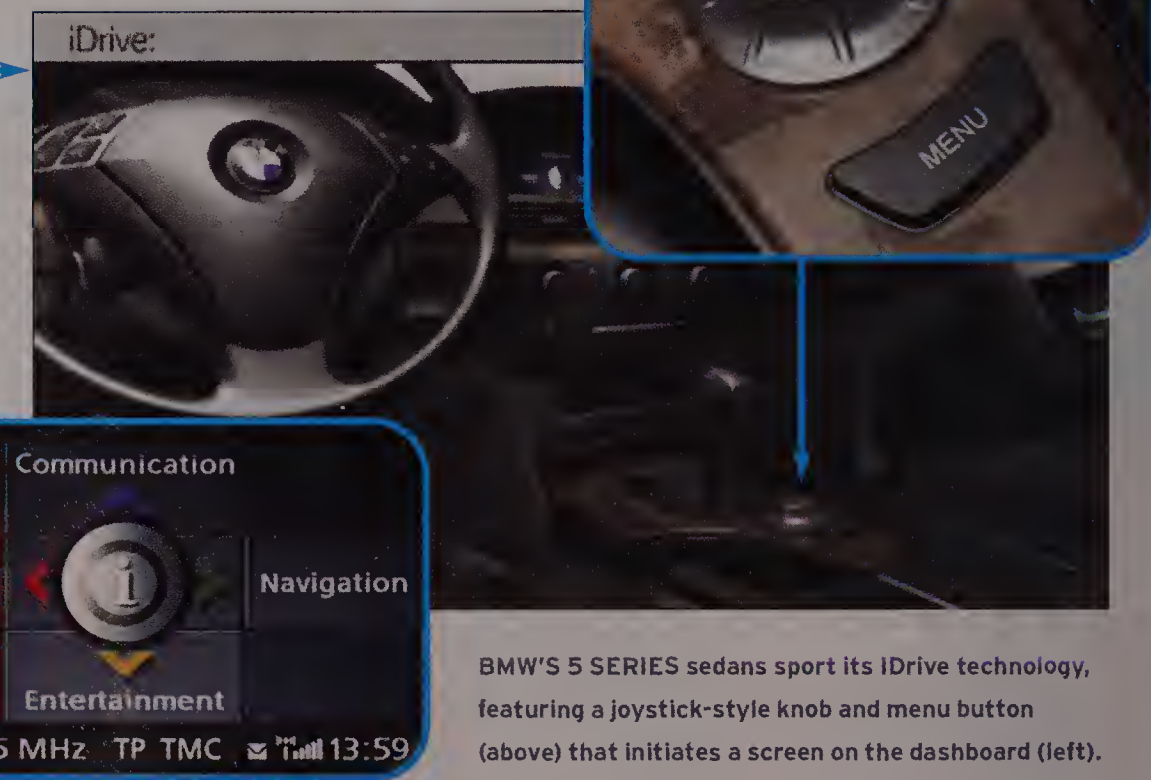
High-Concept Cars

WE'VE BEEN DREAMING about high-tech cars since the Eisenhower administration. Although flying cars aren't here yet, what we can expect over the next two years are vehicles with smarter interior features and embedded hard drives that store maps, phone directories, and digital audio. Thanks to the widespread use of digital audio players, car manufacturers may finally provide line-in jacks in car radios.

Automakers are poised to take another run at heads-up displays, using technology similar to that used in fighter jets to place information in the driver's line of sight. In fact, BMW offers this capability as an option in some of its 5 Series sedans (find. pcworld.com/45192). BMW and Ford are independently working on adaptive cruise control systems that would marry radar sensors with intelligent controls so cars could automatically respond to other drivers on the road by maintaining a safe distance.

WI-FI CAR

NEW USES FOR CURRENT, off-the-shelf technologies are being considered for in-car implementations—for example, using LCD monitors for a customizable dashboard interface, or turning vehicles into



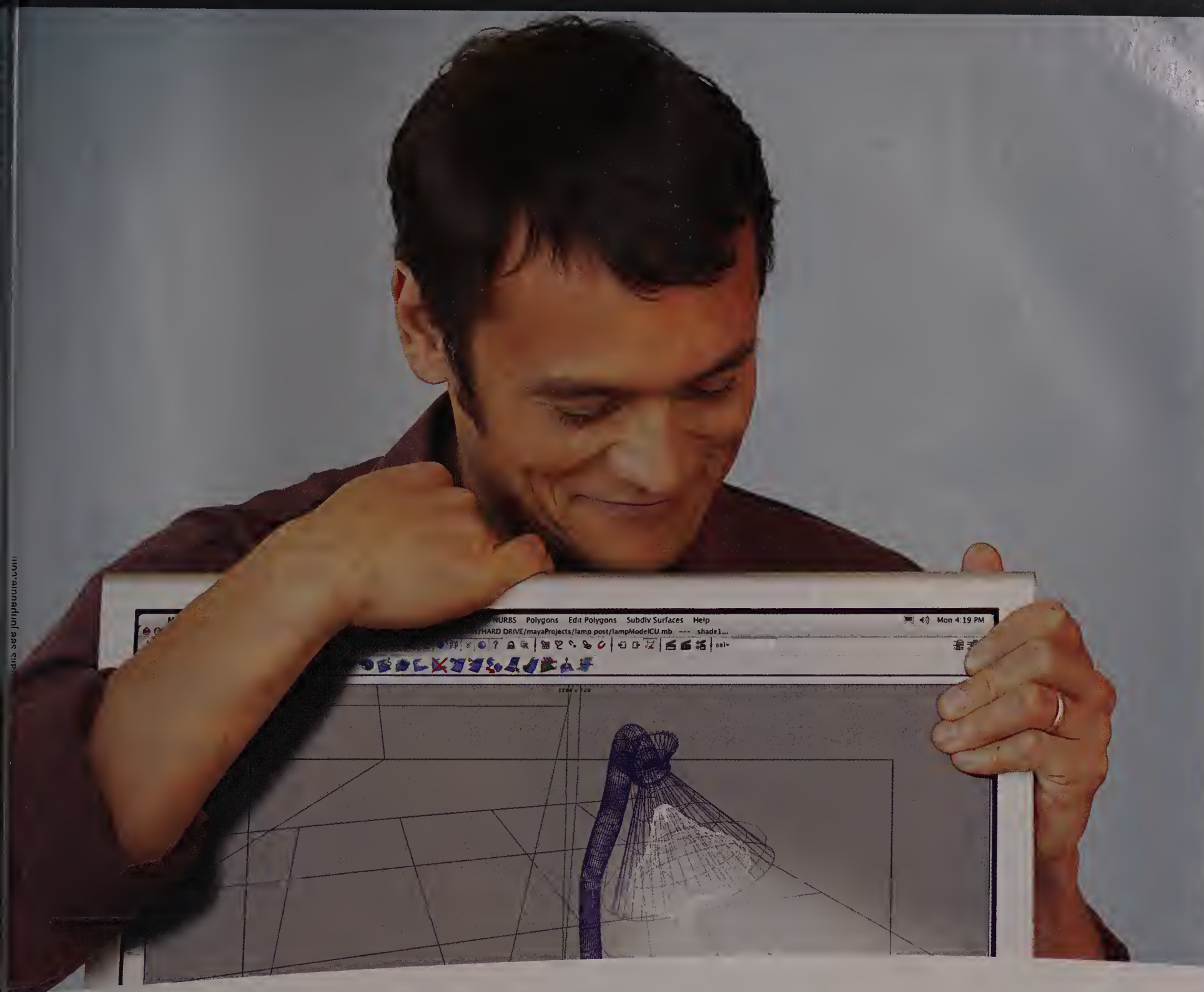
BMW'S 5 SERIES sedans sport its iDrive technology, featuring a joystick-style knob and menu button (above) that initiates a screen on the dashboard (left).

Wi-Fi access points. "There's a lot of talk about the Wi-Fi car," says Thomas Hallauer, editor of TelematicsUpdate.com. Wi-Fi-capable cars could let you download MP3s or navigation maps to on-board systems. But such capabilities will take a couple of years to arrive, he says.

Looking further ahead are the folks at the MIT Media Lab. One of its projects is the "soft car" concept, which envisions a chassis with an airbag-like exterior. Or hubless wheels that place motors and suspension in each wheel so that cars no longer need to be built around rigid drive

trains and suspensions. A more likely advancement is the use of electronic ink—a material that can change the appearance of a surface—so cars could change color, making them more visible at night. Ryan Chin, studio manager for the project at MIT, says the technology could even display messages or advertising. What will they think of next? ■

Michael Desmond is a freelance writer living in Burlington, Vermont. He looks forward to the day when he can have all his gadgets installed subcutaneously in his index finger.



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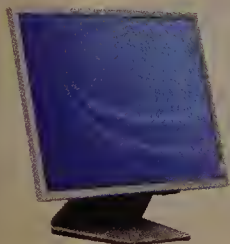


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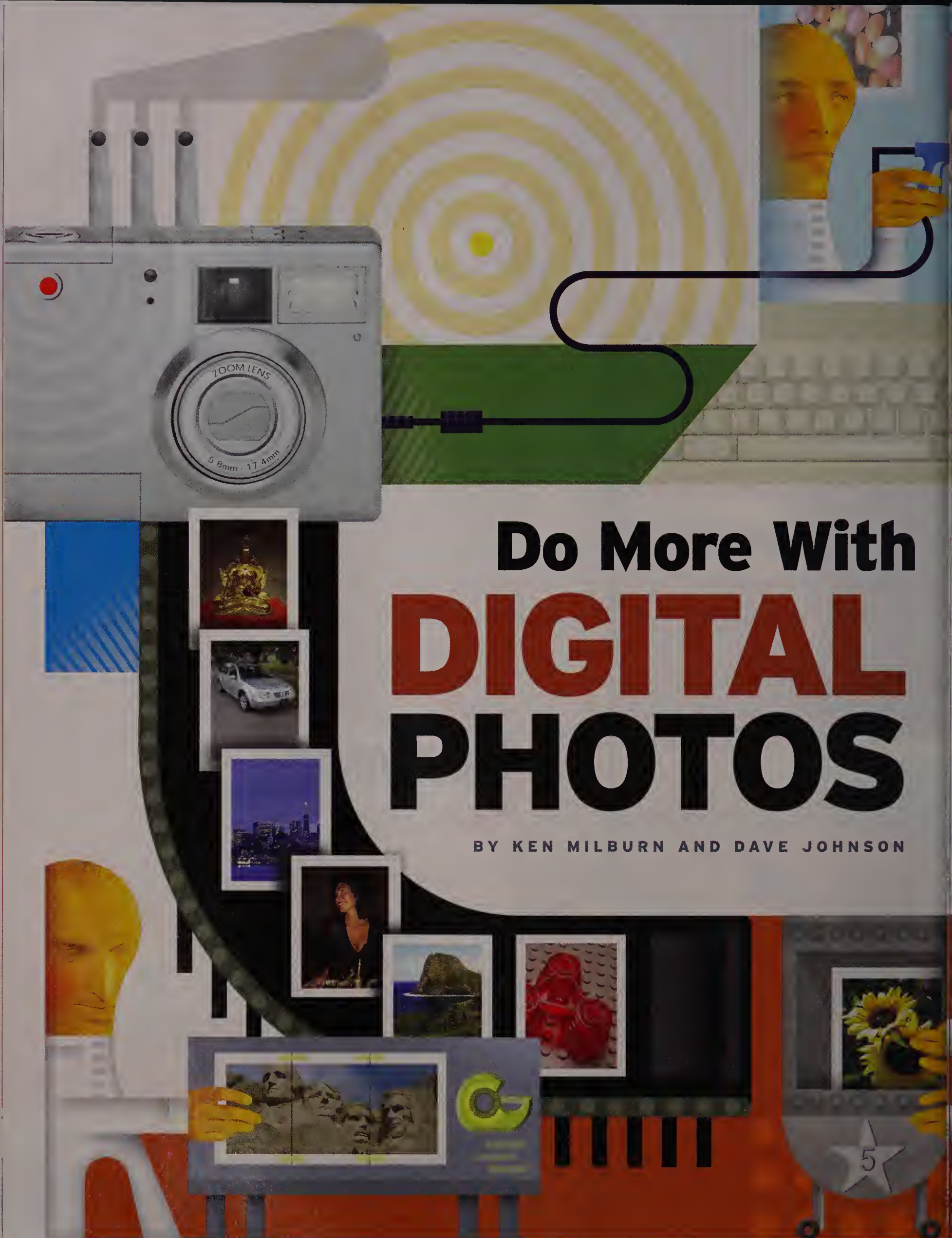
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Do More With **DIGITAL** PHOTOS

BY KEN MILBURN AND DAVE JOHNSON



Fix, manage, share, print, shrink, and stitch: These 22 tools let you get more out of your digital snapshots than ever. And you don't have to be a tycoon to afford them or a photo pro to use them.

ILLUSTRATIONS BY GORDON STUDER

AVID DIGITAL PHOTOGRAPHERS ARE passionate about more than just cameras. They crave powerful tools to organize, edit, and share their pictures. Luckily, today's consumer photo software is more sophisticated than ever, and about \$100 gets you a formidable arsenal.

We looked at four recently updated software packages for intermediate to advanced hobbyists (none support CMYK color for professional printing)—Adobe Photoshop Elements, Jasc Paint Shop Pro and Photo Album, Microsoft Digital Image Suite, and Ulead PhotoImpact. Then we picked the best utilities and plug-ins that do specific tasks better than the big guns.

Throughout, we've pinpointed new features and hidden tools that can help take your digital photography to a higher level. ►

All-Purpose Editing Packages

Adobe Photoshop Elements 3

★★★★☆

\$100, find.pcworld.com/44704

We tested a beta version of Photoshop Elements 3. The most well-rounded of the four major application packages, it's our Best Buy. We liked its many pro-level Photoshop CS tools and its robust new Photo Browser, which incorporates much of Adobe's Photoshop Album product.

Organizing

PHOTOSHOP ELEMENTS 2's old File Browser could catalog pictures on the hard drive and on other mounted media. But the new Photo Browser (modeled after Photoshop Album) can also catalog photos from offline media as well, these showing low-resolution thumbnails of images with little CD icons.

To find photos fast, you can search the Photo Browser by text-based metadata, by keyword, by user-defined star ratings, or by visual data. The Find by Color Similarity With Selected Photo(s) command, for example, lets you choose up to four source photos and search for other photos that share the same subject or predominant color scheme. To group similar pictures, we used the outstanding new Stack command, which proved particularly useful at stacking different edited ver-

sions (collectively called a Version Set) of the same photo. We could then call up the stack view and see thumbnail previews of all of the photos for quick side-by-side comparison.

Editing

PHOTOSHOP ELEMENTS gives you much of the power of the industry-standard Photoshop CS program but with a more consumer-friendly interface consisting of two image-editing environments: Quick Fix, for one-touch adjustments; and Standard Edit, with more-sophisticated tools borrowed from Photoshop CS. A button toggles between the two modes, allowing you to make basic edits speedily in Quick Fix and then do your fine-tuning in Standard Edit.

Two great tools that are new to Photoshop Elements 3 are the Healing Brush and a simplified version called the Spot Healing Brush. They effectively eradicate spots and blemishes by replacing them with the color and texture of the surrounding pixels for a natural-looking result. The healing brushes are easier to use than the Airbrush and Clone tools. (In Elements 3,



the Airbrush is in a new location on the Brush tool's Options Bar.) Another cool tool, called Cookie Cutter, lets you crop an image to any one of a variety of custom shapes (hearts, arrows, stars, paw prints, snowflakes, and such)—perfect for creating kitschy cards or invitations.

Advanced hobbyists will appreciate the Process Multiple Files command, which lets you simultaneously rename, resize, and convert the file formats of any number of images. Plus, Photoshop Elements

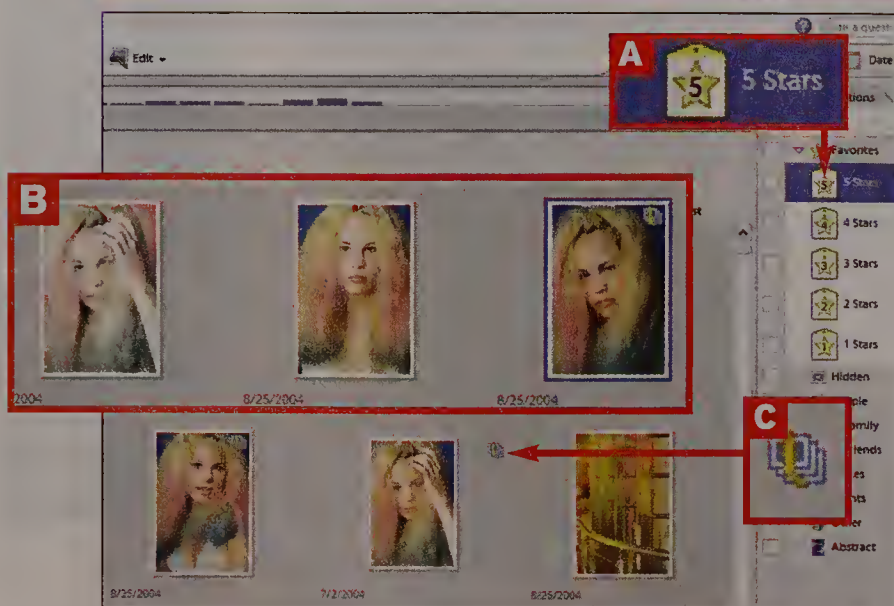


Elements' Healing Brush is more effective than the Clone Brush for removing blemishes, but its default

brush size is usually too small, so don't forget to increase it. To erase a big object quickly, start with the Healing Brush in Replace mode and then smooth over the unnatural edges in Normal mode.

3 has an outstanding light-duty adaptation of the Photoshop CameraRAW plug-in that includes a few advanced settings for functions such as sharpening, luminance smoothing, and color noise reduction. Of the four major applications here, only two—Photoshop Elements 3 and Jasc Paint Shop Pro 9 (see page 89)—can read and adjust RAW (unprocessed) files from a digital camera.

Adobe Photoshop Elements' new organizing tools



A. Rating Stars let you rank your photos so that you can quickly find your top picks later.

B. Find by Color Similarity lets you search for pictures visually.

C. The Stack command lets you group similar pictures behind one thumbnail.

Sharing

PHOTOSHOP ELEMENTS 3 is the best choice for making cleanly designed creations such as cards, photo album pages, and editable HTML Web photo galleries. You'll find plenty of seasonal and event themes, too. Adobe created a \$150 Photoshop Elements plus Premiere Elements video editing bundle that enables you to incorporate photos and slide shows into movies burned to DVD. In addition, Adobe has teamed up with Ofoto to let you create cloth-bound printed books.

Jasc Paint Shop Pro 9 / Paint Shop Photo Album 5 Deluxe Edition

★★★★★ / ★★★★★

\$129 / \$50; find.pcworld.com/44706,
find.pcworld.com/45168

MANY USERS SWEAR by Paint Shop Pro 9, the most powerful of the four image editors we examined. But Paint Shop Photo Album 5 Deluxe Edition (sold separately) falls short of Photoshop Elements' Photo Browser. Corel recently acquired Jasc; however, these products' availability and features should remain unaffected.

Organizing

PAINT SHOP PRO 9 SHIPS with a trial version of its image management sibling, Paint Shop Photo Album 5 Deluxe Edition. (Photo Album 5 Standard Edition comes bundled with Paint Shop Pro Studio, a beginner-level editor not reviewed here.) Photo Album 5 doesn't read RAW

files—a flaw, given that Paint Shop Pro 9 does. Unlike Photoshop Elements 3 and Microsoft Digital Image Suite 10, Photo Album 5 can't search for images using visual criteria; it is limited to searching keyword, date, or certain EXIF data. Photo Album does come with horizontal and vertical panorama photo stitching that automatically flattens curves and crops images to their strongest edge; but our tests found that Microsoft Digital Image Suite did a more accurate job of automatic stitching (see page 90). Also, Album restricts the maximum size of the stitched image to 12MB or 2000 by 2000 pixels, for a square, 24-bit image. This is odd, since many people use panoramic stitching to produce images at resolutions higher than their cameras can support in a single picture.

TIP

To erase a brushstroke that you made without also erasing everything that you did afterward, use Paint Shop Pro 9's History Palette, which continuously displays all of your actions on screen. Simply right-click any action in the History Palette, and then choose to undo that, and only that, particular step.

Editing

EDITING HAS ALWAYS been Paint Shop Pro's core strength. The default interface is quirky, but you can design several interfaces of your own—placing tools, buttons, or palettes wherever you want—and use a command on the File menu to call them up. In the quick-fix department, Paint Shop Pro 9's One Step Photo Fix automatically adjusts such features as color balance, contrast, clarity, saturation, edge smoothness, and sharpness.

Professionals will love Paint Shop Pro's layer management, which is the most complete we've come across in any image editor (including Photoshop CS). ►

GREAT ADD-ONS

Perfect Pictures With Plug-Ins

MANY IMAGE EDITORS, including Photoshop Elements, Jasc Paint Shop Pro, and Ulead PhotoImpact, work with hundreds of standard Adobe plug-in filters. When you see eye-poppingly clever digital effects in photos, they probably were made with plug-ins. Here are seven of the best.

Xenofex 2 delivers more than a dozen of the most outrageous digital effects you'll ever see. Add realistic lighting effects, populate a clear blue sky with clouds, or place your scene inside a television screen. \$129, find.pcworld.com/44746

LensDoc can correct problems that your camera lens causes. If your photos suffer from barrel distortion or pin-cushioning, LensDoc can straighten the warped lines. \$98, find.pcworld.com/44748

Focus Magic has just one mission in life: to sharpen your pictures. It's tuned to remove unwanted blur from your pictures without

merely adding contrast to edges in your scene. This is the approach of traditional tools like Photoshop's Unsharp Mask. \$45, find.pcworld.com/44750

Pxl SmartScale lets you save images at sizes much larger than their original dimensions. Thanks to some fancy mathematics, you can print pictures at otherwise off-limits sizes. \$200, find.pcworld.com/44752

Puzzle Pro turns digital photos into jigsaw puzzles—on screen or for real. Puzzle Pro can save each puzzle piece as a separate file, so you can even create a table-top version of the puzzle if you want. \$50, find.pcworld.com/44754

RedEyePro goes beyond the normal red-eye removal function found in most image editors. It preserves glints and reflections

while removing the evil red glow. It can even remove the corresponding green-eye effect that plagues photographs of some animals. \$39, find.pcworld.com/44756

AutoEye 2.0 is a more effective tool than the red-eye removal filters of all the big applications except Paint Shop Pro. It restores lost color, recaptures detail, corrects brightness, and eliminates moiré patterns. \$129, find.pcworld.com/44758



Specialized layers include Raster, Vector, Adjustment, Mask, and Art Media. The Art Media layer is particularly cool: When we designated it as a Wet Art Media Layer (as opposed to a Dry Art Media Layer), colors that touched bled together. Paint Shop Pro's new selection of Art Media Brushes—Oil Brush, Chalk, Pastel, Crayon, Colored Pencil, Marker, Palette Knife, and Art Eraser—have the look and feel of their natural media counterparts without requiring you to construct the look using complex brush options, as is the case with Photoshop Elements.

The filters on Paint Shop Pro 9's Adjust menu can correct common digital photography problems such as noise (unsightly grains of color throughout the picture) and the optical distortions that are prevalent in consumer (and sometimes professional) digital cameras. Automatic dust and scratch removal features work without oversoftening the entire image, but the RAW editor is far less powerful than the one in Photoshop Elements.

Sharing

PAINT SHOP Photo Album 5 and Paint Shop Pro 9 give you about 15 ways to share photos, including via video CDs, TV slide shows, and—through a partnership with MyPublisher.com—cloth-bound books. We were impressed with Album's scrapbook album layouts. Even family-

oriented themes looked professional, and the six-to-a-page layout with space for captions would be excellent for storyboards. If you want to print several photos at 4 by 6 inches, select the images you want in Photo Album 5, click the Batch button, and select the Crop to 4x6 command.

Microsoft Digital Image Suite 10

★★★★☆

\$129, find.pcworld.com/43600

DESPITE LACKING the versatility of Photoshop Elements' Photo Browser and the power of Paint Shop Pro's image editor, Microsoft's Digital Image Suite 10 offers strong features particularly appropriate for beginners. The interface can be quirky, though.

Organizing

DIGITAL IMAGE SUITE 10's Digital Image Library gives users fewer searching and grouping options than does the Organizer in Photoshop Elements 3. It also lacks support for RAW images. Where the Digital Image Library does stand out, though, is in its ability to archive images, either on demand or automatically at scheduled intervals.

The Digital Image Library's Find Similar Picture command lets you search

visually for areas of light and dark, as well as similar exposure, grouping the results into Most Similar, More Similar, Less Similar, and Least Similar categories. This arrangement yields more-organized search results than you can get from Photoshop Elements. In our tests, we searched for results similar to a picture of a woman in the corner of a store. The Most Similar results we obtained were of the exact scene captured in our source image. The More Similar results had the same lighting and orientation but sometimes different subjects. The Less Similar search results were of like color

TIP

To correct the exposure in a small region of a picture—like the shadow on someone's face in a bright outdoor photo—using Digital Image Suite's Exposure and Lighting tool is like putting out a match with a fire hose. Instead, try the little-known Dodge and Burn Brush. Choose *Touchup•Other Photo Repair•Dodge and Burn Brush*, and then use your mouse to precisely paint in changes to brightness and contrast.

and brightness, while the Least Similar group was a catch-all collection.

Editing

THE MINI LAB, Digital Image Suite 10's batch-editing feature, is excellent. It lets you apply a combination of one-click fixes

to a selected group of images. While in the Digital Image Library, choose *Touchup Batch Edit in Mini Lab* from the Tasks menu. The Mini Lab's interface opens up to present you with levels; contrast, color, and exposure Auto Fix tools; and rotation and resizing options.

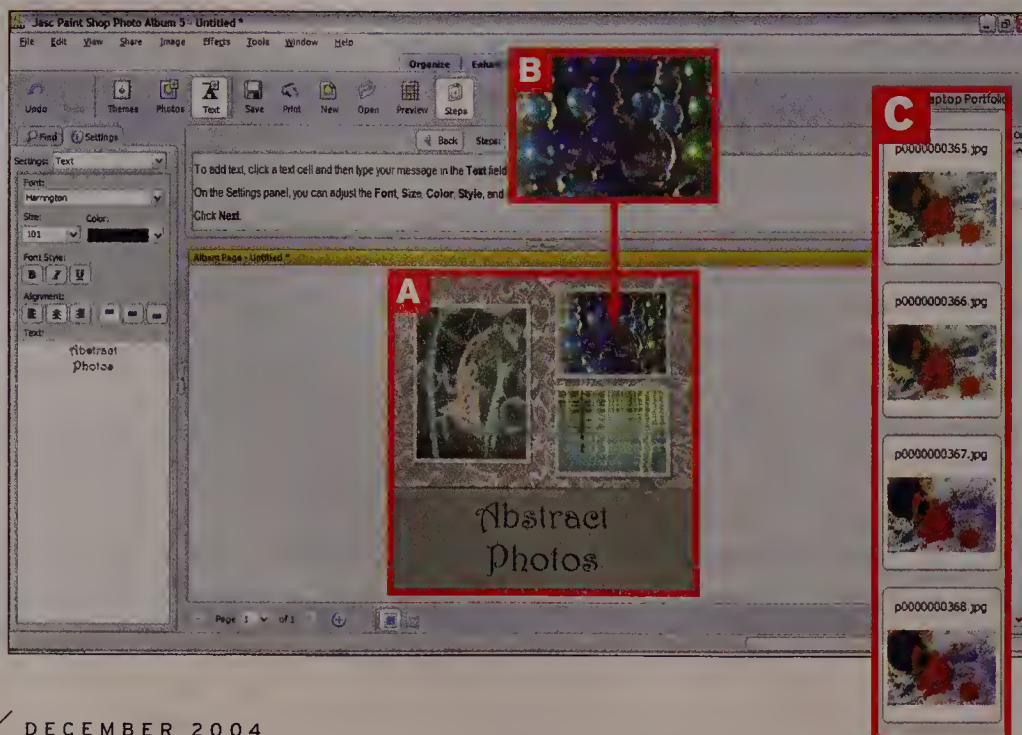
For damage control, Digital Image Suite includes some worthy Healing Brush-type tools such as the ►

Jasc Paint Shop Photo Album's decorative layout templates

A. Paint Shop Photo Album 5's layout designs are decorative, yet professional.

B. Paint Shop Pro 9's Art Media layer lets you add cool natural-media effects to images.

C. Paint Shop Photo Album 5 gives you immediate access to open photos in the window's right-hand column.





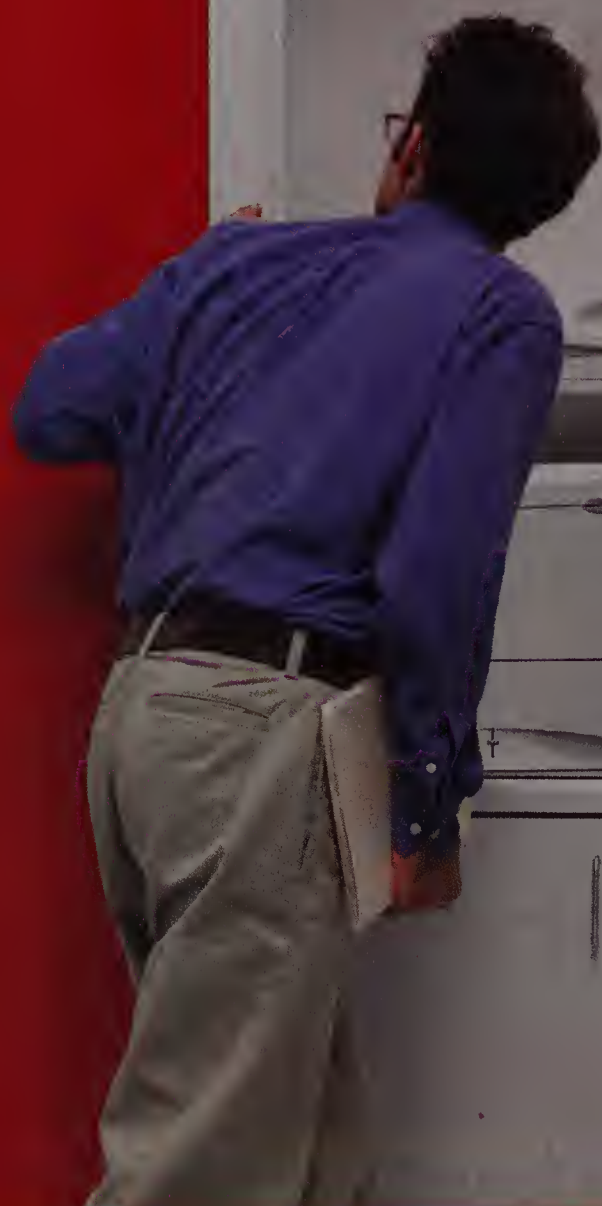
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- Automatic duplexing
- 1-year warranty

brother

\$599⁹⁹
CDW 627134

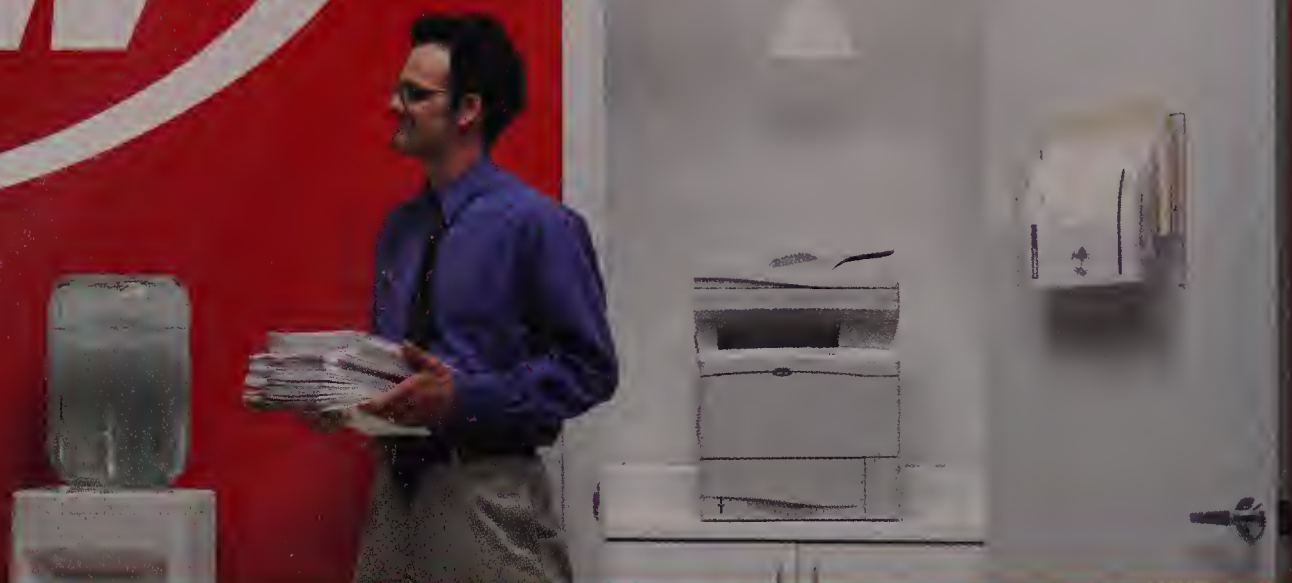
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BOTTOM LINE

PHOTO EDITORS HAVE DIFFERENT STRONG POINTS

EACH OF THESE FOUR FULL-FEATURED APPLICATIONS excels at something, but which excels at the particular features you're looking for? Here's how each package rates in six major feature categories.

MAJOR PHOTO PACKAGES	Star rating	Album organizer	Quick-fix tools	Batch-editing tools	Panoramic stitching	RAW file support	Sharing options	Comments
Best BUY Adobe Photoshop Elements 3 find.pcworld.com/44704	★★★★☆	thumbs up	thumbs up	thumbs down	thumbs down	thumbs up	thumbs up	This is the best overall application, with the best organizer. Batch editing is weak.
Jasc Paint Shop Pro 9 find.pcworld.com/44706	★★★★☆	not available	thumbs up	thumbs up	not available	thumbs up	not available	The organizer is weak, but the editor is strong, with the most powerful (if not the easiest) batch-processing and natural-media tools.
Photo Album 5 Deluxe Edition find.pcworld.com/45168	★★★★☆	thumbs down	not available	not available	thumbs up	thumbs down	thumbs up	
Microsoft Digital Image Suite 10 find.pcworld.com/43600	★★★★☆	thumbs up	thumbs up	thumbs up	thumbs up	not available	thumbs up	Features and interface are good for beginners. The Mini Lab is great for batch editing and quick fixes.
Ulead PhotoImpact 10 find.pcworld.com/44708	★★★★☆	thumbs down	thumbs up	thumbs up	not available	thumbs down	thumbs down	This package has unique advanced editing features and can apply multiple fixes with one command.

Blending Brush; however, Elements 3's Healing Brush is easier and faster to use. Digital Image Suite's Blending Brush provides you with a different interface in which you can edit only one image at a time. Smart Erase lets you erase unwanted objects (such as trash cans under palm trees) by lassoing and clicking them. With small or simple objects, this saves buckets of time. You can instantly remove wrinkles, for example, by simply dragging a selection box around them. But when you use the tool on large, complex objects, you end up with a big smudge.

Of the four applications in our roundup, Digital Image Suite 10 does the best automatic photo stitching to create vertical or horizontal panoramas. Though you can manually match up two photos, we had trouble matching up perspectives and stitching images without common borders.

A few shortcomings for advanced users: Digital Image Suite 10 can't save to Photoshop's native file format for editing layers, and its own layers format is limited. It also can't apply some commands to 16-bit-per-channel images used by professionals.

Sharing

WHILE DIGITAL Image Suite offers the largest selection of project templates—including forms for Calendars, Greeting Cards, and Photo Crafts (such as designing playing cards)—the designs tend toward the corny or the Hallmark saccharine (such as the pink floral theme of the baby album). One notable exception is the vast array of Business and Address Card templates, which are cleanly designed. Additionally, the suite comes with the Photo Story 2 slide-show software. This easy-to-use application lets you create a Ken Burns-style Windows Media Video (WMV) composed of still

images. The software walks users step-by-step through selecting images, adding audio, and creating custom-configured panning and zooming effects.

Ulead PhotoImpact 10

★★★★☆

\$90, find.pcworld.com/44708

PHOTOIMPACT 10 comes with some powerful, unique photo editing features that may be worth the purchase price alone, but it suffers from lackluster sharing options and a strangely redundant organizer. This package works better as a companion program than as your main editing software.

Microsoft Digital Image Suite's panoramic stitching

A. Digital Image Suite's automatic Panoramic Stitching is impressive.

B. Browse through thumbnails of open photos while you're editing.

C. Easy-access tutorials are great for beginners, although they take up quite a bit of screen real estate.



Organizing

PHOTOIMPACT 10 comes with three organizers: The internal browser manager works like Photoshop CS's File Browser. The bundled PhotoImpact Album 10 application resembles the old Photoshop Album, only it's less versatile. And the Photo Explorer module of PhotoImpact 10 is something in between the browser manager and Album. The three-organizer setup has overlaps, with no individual piece being outstanding.

In PhotoImpact Album 10, you can choose themed album configurations—such as General Purpose, Family Album, Photographer's Album, or Real Estate Portfolio—with predefined fields. If one of the templates works for you, you're set.

two different exposures to get an extended range of definition in both highlights and shadows. The program is intelligent enough to combine two pictures taken without a tripod and (therefore) having different proportions and framing. If you are a landscape photographer, the ease of use of this feature justifies the purchase price. PhotoImpact 10's Lens Distortion command has one of the slickest interfaces we've seen, permitting interactive correction of both lens and parallax distortion, using adjustable grid lines. The software



Use PhotoImpact 10's Extract Object command to select an object by knocking out the background. To control exactly how the background separates from the foreground, it is critical to choose the correct brush size. Use a thick brush to create a feathery artistic effect. Use a very thin brush to accurately erase the background from around a person. You can clean up any unsightly color fringes afterward by selecting the Defringe command from the Object menu.

Rotate in Virtual 3D command, which rotates 2D images in virtual 3D, can perform a neat trick when you're creating composite shots. Say you want to put the subject of picture A in front of the background of picture B, but the pictures were taken from different perspectives. You

can use the Rotate in Virtual 3D command to correct the perspective of the foreground subject so that it more closely matches the orientation of the background matter.

Sharing

WHEN IT COMES to sharing, PhotoImpact offers little and PhotoImpact Album offers only slightly more, covering just the basics. You can export a group of pictures from PhotoImpact Album 10 to a slide show that can then be e-mailed, uploaded to a

Web site, or exported to a CD; this gives you a cheap, convenient way to distribute a portfolio. You can automate the production of a Web gallery, too—but instead of the templated approach of, say, Photoshop Elements, PhotoImpact uses a wizard that takes you through layout and formatting options. People who want more control over customization than a template allows will prefer this method.

Professional photographer Ken Milburn has written numerous books and articles on digital photography, including Digital Photography: Expert Techniques (O'Reilly Media).

ULead PhotoImpact's High Dynamic Range exposure editing



A. The High Dynamic Range feature can combine two smaller images (right) into a larger image (left) that uses their full range of brightness.

B. Command dialog boxes stack in an easy-access column.

C. The Auto-process dialog box lets you apply several adjustments at once.

If not, you'll discover that creating a customized album can be a painstaking process. A convenient command called Tile With Album automatically resizes thumbnails in a column along any side of the PhotoImpact workspace. PhotoImpact Album doesn't provide thumbnails for RAW files, but it does list them.

Editing

PHOTOIMPACT 10's user interface takes some getting used to, but a few of its editing tools are worth the effort.

The new High Dynamic Range feature

also contains a better-than-average noise reduction filter, with sliders for making subtle fix-as-you-go tweaks.

Other notable features: The Color Cast command helps you remove color casts caused by mixed lighting or reflections. Choosing the command brings up a dialog box that lets you sample a color that should be neutral in the original photo. That color then shows up on a color wheel. Dragging that color to the wheel's center removes the color cast.

Beautify Skin is a one-click fix for subtle skin problems such as blotchiness or big pores (it won't totally erase wrinkles). The

The Specialists

DIGITAL PHOTOGRAPHERS, particularly those who perform specific tasks over and over again, will benefit from using single-purpose photo utilities, many of which do their thing better or faster than comparable features in the all-purpose suites. Here's a rundown of our favorites.

Organize

Name Dropper 3

\$15 (free trial),

find.pcworld.com/44714

DO YOU HAVE thousands of pictures with obscure, camera-generated names such as DSC_72455.jpg and IMG49490.jpg? Name Dropper lets you apply industrial-strength naming power to your photo archives. Assign names to Name Dropper's dozen configurable buttons with a

mode displays your images in a fluid, spinning chronological carousel. Browse the display until you find what you're looking for, and then click to open a set of pictures; or drag a timeline pointer through a histogram that shows your pictures on a scale from oldest to most recent. As you find pictures that you want to edit, print, e-mail, or share, click the *Hold* button to keep them in the on-screen Picture Tray; there, you can operate on all your favorite images at once.

Preclick 2.5

\$20 for Preclick Gold, free for Silver,

find.pcworld.com/44724

PRECLICK IS ANOTHER outstanding photo organizer—

its PhotoBack pane displays important information about the current picture (such as date, caption, and people) beside the image, and you can instantly search your entire photo library for any keyword.

Noise Ninja 2.02

\$29 (free trial), find.pcworld.com/44726

PICTURES TAKEN in low light or with a high ISO setting can end up showing a lot of digital noise—unattractive grains of color that appear throughout the picture. Noise Ninja is one of the finest noise reduction tools we've ever seen. To get the best results, use Noise Ninja in two passes: First, either load a noise profile or use the "Auto profile" button to have Noise Ninja scan your photo; on your next pass, remove the offending pixels with the "Remove noise" button. The results frequently look better than pictures that were taken at a lower ISO setting.

Image Stacker 1.03

\$17 (free trial),

find.pcworld.com/44730

LONG-EXPOSURE nighttime photography is beyond the reach of many digital photographers. Even if you use Noise Ninja to clean up the inevitable noise, most cameras can muster only severely limited

TIP

Use Picasa to quickly find image files that you want to open in another program. Send the pictures to the Picture

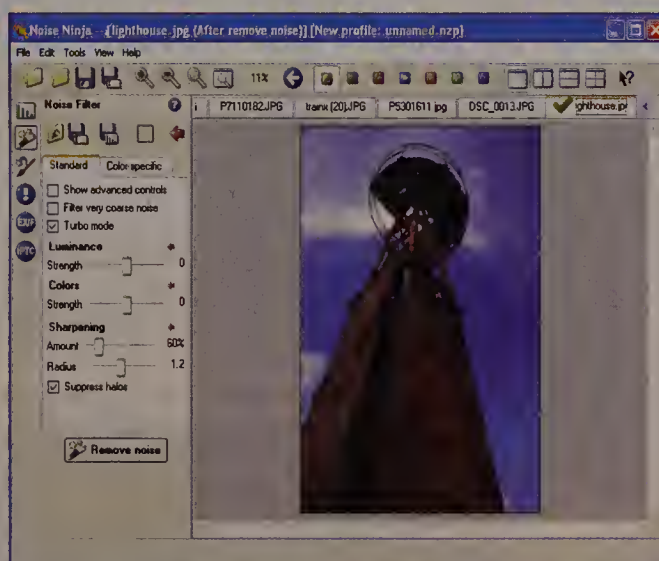
Tray, select them by dragging the mouse around them, right-click, and choose *Locate on Disk*. Picasa will open all selected photos within their respective folders on the Windows Desktop—ready for business.

quick right-click, and then browse your pictures and click the buttons to assign names. By clicking multiple buttons you can create complex names, such as "Company Picnic—Sally" and "Company Picnic—Bill." You can save even more time by preserving useful Button Templates and loading, as needed, the appropriate template for different sets of pictures.

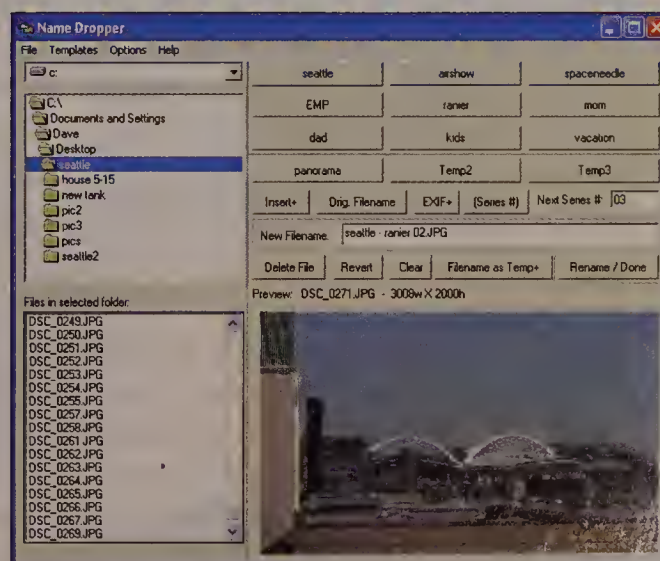
Picasa 1.618

Free, find.pcworld.com/44716

PICASA IS SO EFFECTIVE at locating photos that Google bought it to incorporate it into its Blogger service. Picasa's timeline



NOISE NINJA lets you remove unsightly grains of color.



REPLACE cryptic file names with Name Dropper.



Take advantage of Pre-click to establish a logical workflow; when you find the pictures that you want to print, click the printer icon. The images accumulate in the printing tab, so you can later print them all at once.

Edit

lengths of exposure. Image Stacker lets you take series of short exposures and combine them into a shot that looks like a long exposure. It helps to know which of the program's blending modes to use. If you're trying to make light trails in a night photo, try using the Brighten command. Stack is the better bet for brightening dim objects in the scene.

Panorama Factory 3.3

\$60 (free trial),

find.pcworld.com/44732

ADVANCED PHOTOGRAPHERS should skip the big suites and try Panorama Factory, which allows users to stitch shots in QuickTime VR format—just the thing for panning and zooming around the scene as if you're in it. Panorama Factory's wizard doesn't automatically arrange pictures in the right order for you, but it does offer exposure matching in the Blending Properties tool so as to eliminate the abrupt changes in brightness that can occur between images in the panorama.

Share Digitally

SendPhotos Gold 2.03

\$20 (free trial), find.pcworld.com/44734

SENDPHOTOS GOLD takes the difficulty out of e-mailing digital images by automatically resizing, formatting, and displaying pictures in-line within an HTML message. If you want to share full-size, 6-megapixel images suitable for printing, SendPhotos Gold isn't the right tool, but it does work for casual sharing. Also, try the dozens of built-in stationery styles for decorating your picture e-mail. And if you're feeling adventurous, use Create Stationery to design your own photo layout completely from scratch.

TIP

SendPhotos Gold automatically arranges and resizes your photos to look attractive in e-mail—but most people never notice the Layout button in the toolbar. Click it and you can vary the size of your photos in the message and control whether pictures appear in multiple columns, or in other arrangements.

PhotoParade Essentials 5 Standard Edition

\$30,

find.pcworld.com/44736

PHOTOPARADE ESSENTIALS lets you share pictures in a slide show on CD or via e-mail. Add pictures from your PC to a PhotoParade Gallery, and then turn the Gallery into a slide show. By right-clicking on images, you can add captions and voice narration, and perform minor image editing tasks like cropping and red-eye removal. Choose from a wide range of musical themes or add music from an MP3 or WAV file.

Hello 1.0

Free, find.pcworld.com/44738

FOR INSTANT messaging fans, Hello, from the makers of Picasa, is a welcome tool. It lets you share pictures interactively with other Hello subscribers in a text-chat environment. It's a great way to talk about your pictures online. When you select an image and type in the chat window, a thumbnail appears with your text, making it easy for online friends to associate your comments with a photo. And if you open your friend's View window, you can see which of your sent images they are browsing, so you can jump in with text commentary.

Share in Print

Power Print 2.10

\$34 (free trial), find.pcworld.com/44740

POWER PRINT DELIVERS more options for creating prints of photos than any editing suite or drugstore. Tell

Power Printer what drive letter Windows uses to refer to your digital camera, and you can select all of your pictures—while they're still in the camera—for printing at any standard size. Or drag a

TIP

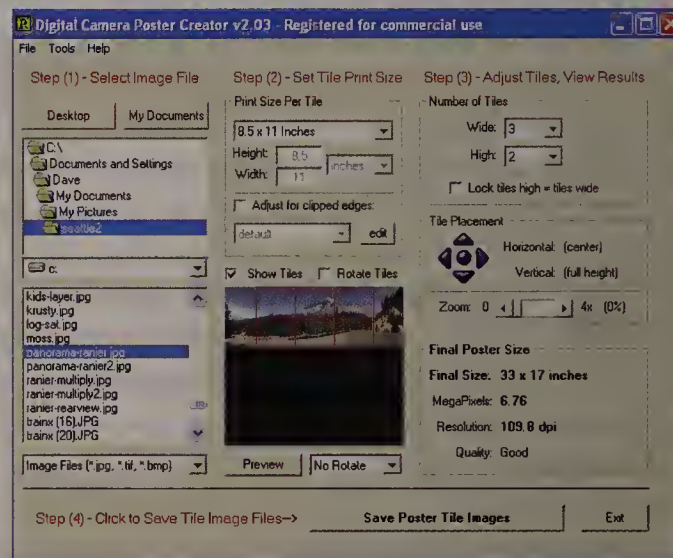
You won't get great-looking posters using Digital Camera Poster Creator unless the various tile pages line up properly when printed. To fine-tune your prints, choose *Tools•Edge Calibration* and print a test page. Then save a profile that indicates how close to the edge of your paper your printer can print.

bunch of images to the list of print sizes on the side of the screen to print them automatically at just the size you want. Power Print also arranges them on the page in the most space-efficient way.

Digital Camera Poster Creator 2.03

\$29 (free trial), find.pcworld.com/44742

WHAT GOOD IS having an 8-megapixel camera when the biggest print your printer can make is 8 by 10 inches? Digital



DIGITAL CAMERA POSTER CREATOR lets you make oversize prints without running to the copy shop.

Camera Poster Creator is a low-cost alternative to buying an industrial press—it lets you make posters by tiling together sections of the picture. The final poster size is determined by the size of each tile and the number of tiles you print. Don't forget to keep an eye on the resolution and the quality status—Poster Creator not only advises you on the final dpi at various sizes, but it also makes a general assessment, such as "good quality" or "fair from a distance."

Dave Johnson writes PC World's weekly Digital Focus newsletter and is the author of three dozen technology books, including How to Do Everything With Your Digital Camera, 3rd Edition (Osborne/McGraw-Hill).

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- 512MB DDR333 SDRAM
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- Integrated Super Multi Write Plus (DVD -RW, +RW, -RAM) drive
- 5-in-1 card reader
- 17.0" WXGA (1280 x 800) TFT display
- ATI® MOBILITY™ RADEON™ X600 graphics, 64MB DDR
- 802.11b/g WLAN, Bluetooth™, gigabit LAN, V.92 modem

Now with
Microsoft® Windows® XP
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INTEL® PENTIUM® 4 PROCESSOR 540 WITH HT TECHNOLOGY
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Savvy users know that a wide-angle display can make work easier and enhance productivity. You'll see sharp text and crisp images on the Acer TravelMate 2700's 15.4" wide-angle LCD and have the convenience of viewing spreadsheets side by side on a single screen. Combining practicality with first-class performance, the Acer TravelMate 2700 is an excellent choice for small/home offices and small-to-medium businesses as well as government/educational institutions.

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- Microsoft® Windows® XP Professional
- 512MB DDR333 SDRAM
- 40GB¹ hard drive
- Integrated CD-RW/DVD-ROM combo drive
- 15.4" WXGA (1280 x 800) TFT display
- ATI® MOBILITY™ RADEON™ 9000 graphics
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Acer TravelMate 2701WLCi-
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Acer AL1714

- 17.0" TFT LCD
- 1280 x 1024 native resolution
- 350:1 contrast ratio
- 160° horizontal viewing angle
- 120° vertical viewing angle
- Black color

Acer AL1714

\$299

acer
Empowering People

Prices shown are estimated street prices and do not include tax or shipping. Retailer or reseller prices may vary.

acer

Acer® Veriton® 7600GT Business Productivity Tool - Minitower

The Acer Veriton 7600GT minitower, with a deep-charcoal chassis, is a superb business productivity tool that includes a powerful processor, integrated graphics, management software and room for expansion. The one-touch recovery feature easily returns the PC to its original configuration.



- Intel® Pentium® 4 Processor with HT Technology or Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
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- 1.44MB' floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN

Acer Veriton 7600GT-U-P3201

\$891

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3.20GHz
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80GB' HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 7600GT-U-N2800

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Acer® Veriton® 5600GT Business Productivity Tool - Standard Desktop

The Acer Veriton 5600GT standard desktop offers the ultimate balance between space-saving design and expandability, all in a handsome deep-charcoal chassis.



- Intel® Pentium® 4 Processor with HT Technology or Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 1.44MB' floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN

Acer Veriton 5600GT-U-P3201

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INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3.20GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
80GB' HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 5600GT-U-N2800

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INTEL® PENTIUM® 4 PROCESSOR 2.80GHz
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MICROSOFT® WINDOWS® XP PROFESSIONAL
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Acer 15.0" Flat Panel Display

A 15.0" LCD is appropriate when both space and budget are limited. It's suitable for most business applications as well as home activities, such as Web surfing and e-mail.



Acer AL1512

- 15.0" TFT LCD
- 1024 x 768 native resolution
- 450:1 contrast ratio
- 120° horizontal viewing angle
- 110° vertical viewing angle
- 2 x 1.5W integrated speakers
- Black color

Acer AL1512

\$239

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Acer recommends Microsoft® Windows® XP Professional.

Acer® Veriton® 3600GT

Business Productivity Tool - Compact Desktop

The compact form factor of the deep-charcoal Acer Veriton 3600GT makes it the perfect desktop solution when space is at a premium.



- Intel® Pentium® 4 Processor with HT Technology or Intel® Pentium® 4 Processor
- Microsoft® Windows® XP Professional
- 512MB DDR400 SDRAM
- 1.44MB floppy drive
- Intel® Extreme Graphics 2
- Gigabit LAN



Acer Veriton 3600GT-U-P3201

\$891

INTEL® PENTIUM® 4 PROCESSOR WITH HT TECHNOLOGY 3.20GHz
(1MB L2 CACHE, 800MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
80GB¹ HARD DRIVE AND CD-RW DRIVE.

Acer Veriton 3600GT-U-N2800

\$745

INTEL® PENTIUM® 4 PROCESSOR 2.80GHz
(512KB L2 CACHE, 533MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
40GB¹ HARD DRIVE AND CD-ROM DRIVE.

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- CD-ROM drive
- 1.44MB¹ floppy drive
- Intel® Extreme Graphics 2
- 10/100 LAN

AcerPower F2-U-N2800

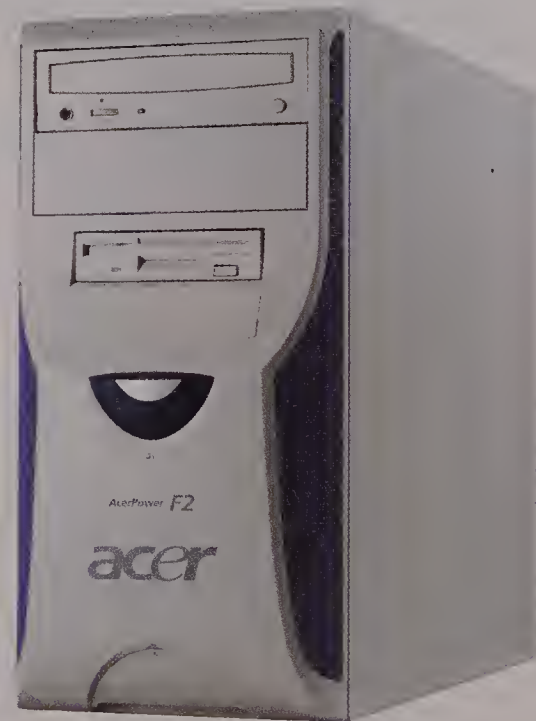
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AcerPower F2-U-C3000

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MOBILE
TECHNOLOGY

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Acer recommends Microsoft® Windows® XP Professional.

- Intel® Centrino™ Mobile Technology
- Microsoft® Windows® XP Professional or
- Microsoft® Windows® XP Home Edition
- 40GB¹ hard drive
- Integrated CD-RW/DVD-ROM combo drive
- 15.0" XGA (1024 x 768) TFT display
- Intel® Extreme Graphics 2
- 802.11b/g WLAN, 10/100 LAN, V.92 modem

Acer TravelMate 4000LCi- XPP-2MB

\$1,099

INTEL® PENTIUM® M PROCESSOR 710
(1.40GHz, 2MB L2 CACHE, 400MHz FSB)
MICROSOFT® WINDOWS® XP PROFESSIONAL
AND 512MB DDR333 SDRAM.
(LX.T5306.024)

Acer TravelMate 4000LCi- XPH-2MB

\$999

INTEL® PENTIUM® M PROCESSOR 710
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¹ When referring to storage capacity, GB stands for one billion bytes and MB stands for one million bytes. Some utilities may indicate varying storage capacities. Total user-accessible capacity may vary depending on operating environments.

² For a free copy of the standard limited warranty end-users should see a reseller where Acer products are sold or write to Acer America Corporation, Warranty Department, P.O. Box 6137, Temple, TX 76503.

For the name of a reseller near you or further
information, please call Acer or visit our Web site:

800-571-2237

www.acer.com/us

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PROTECT YOUR IDENTITY

Phishers and other online thieves are targeting your money and personal data—and they're getting sneakier. Here's how to defend yourself, and how to erase the damage if you get scammed.

BY BOB TEDESCHI ♦ ILLUSTRATIONS BY STUART BRADFORD

BARBARA HEAD, a stay-at-home mother of three in Mocksville, North Carolina, was checking her e-mail and saw a notice from AOL saying she needed to update her account information. It looked

legit, so she followed the link. But she ended up handing her personal and financial information to a phishing scammer, who then assumed her identity and rang up hundreds of dollars in charges with her PayPal account, which was linked to her credit union checking account. Among other things, the criminal set up a fake business using her initials (B&H Enterprise) to conduct transactions in her name. That action, though not common, lent credibility to the thief.

Head discovered the fraudulent activity after receiving overdraft notices from the credit union, and spent countless hours over six months clearing her name and credit history. The only positive note: She caught the thief that got her.

GROWING PROBLEM

IDENTITY THEFT is one of the fastest-growing crimes in the United States, with victim complaints quadrupling between 2000 and 2004, according to the Federal Trade Commission. Most victims are hit merely with credit card account hijackings, but for many others the situation is much worse. In the past five years, the FTC estimates, 10 million people have had criminals open new credit card accounts, secure utility services, or apply for mortgages under their names, spinning a web of deceit that can take years to unravel.

Authorities say that in many cases leaks leading to identity theft don't come from victims, and a glance at the headlines underscores the point: Thieves once stole tens of thousands of credit reports from the major reporting bureaus, and one Web site unwittingly made public thousands of client names and credit card information.

Meanwhile, doctors' offices, schools, and other institutions hold your informa-



BARBARA HEAD
spent six months
clearing her credit.

tion behind ineffective firewalls that are easy pickings for hackers and even easier pickings for unscrupulous employees.

But for phishing scams, the most rapidly expanding method of identity theft, consumers do bear some responsibility—and they can take back some control.

The instances of new, distinct phishing e-mail attacks are growing by about 40 to 50 percent monthly, and reached about 2000 total in July of this year, according to the Anti-Phishing Working Group, a multi-industry consortium formed last year to combat this type of fraud (www.antiphishing.org). In fact, such scams are so easy to create and so difficult to trace, thieves are abandoning other identity theft methods and setting up phishing camps. Worse, the scams are getting slicker, making it difficult for even the most observant users to tell the real from the fake. And soon phishers may disguise their hooks and use spyware, another plague of the Internet, to sneak into your PC and steal your information.

There is good news. Phishing and other forms of online identity theft can be prevented, authorities say, but it takes a more scrupulous approach to security—with,

possibly, a minor cash outlay to get regular credit reports and software tools—and a lot of skepticism as you read your e-mail.

You can also add new weapons to your arsenal: Antiphishing tools have debuted from several vendors and from some ISPs, with others sure to follow (see “Don’t Get Reeled In” on page 112 for details).

PHISHING HOLES

YOU’VE PROBABLY seen lots of phishing e-mail. Scammers forge the “from” field of a message so it appears to come from a reputable company like Citibank, EBay, or PayPal, to name a few of the more popular aliases. It urges you to click on a link in the e-mail to update account information for some alarming reason—often because the “company” suspects that the account has been tampered with. The link leads to a Web address and page that look credible, and all you need to do is type in your information and click Send.

Then the mayhem begins.

Armed with your address and your Social Security, bank account, and credit card numbers, plus any other information the phishers have gleaned from you, they can engage in shopping sprees and

even establish a new address bearing your name, along with a series of new credit card accounts.

Even the more discerning tech-savvy consumer can be scammed, as phishers in recent months have gotten more sophisticated, relying on software to mask the Web addresses of their "spoof" sites with the addresses of legitimate pages. Thieves make perfect copies of logos and graphics from the legit sites they mimic, and even insert malicious code on top of a trusted site so that you go to the right URL but enter your information into a pop-up window the scammers provide. On MailFrontier.com, the Web site of an e-mail security company, users can test their knowledge of legitimate and fraudulent e-mail. On average, the more than 200,000 people who tested themselves on ten sample messages failed to detect at least three fraudulent ones. And that's when they were looking for them.

SPYWARE IN THE MIX

MORE WORRISOME is the likelihood that, according to David Jevans, chair of the Anti-Phishing Working Group, there's a "coming convergence of spyware and phishing." Spyware that loads onto your PC and, for example, tracks your keystrokes and sends the data to criminals has largely been the province of sophisticated thieves and hackers. But with users wising up to phishing ploys, spyware appears to be the new weapon of choice.

With this type of scam, you would be invited to click on an image—to get a low-priced item or sweepstakes entry, for instance. With that click, you'll unknowingly download spyware onto your PC.

Phishers may have to wait longer for your personal information, but eventually it will come as they analyze your keystrokes and correlate that data with the sites you've been surfing.

According to a study last year by the nonprofit Identity Theft Resource Center, identity theft victims spend on average 600 hours and \$1400 to clear their names and credit histories. The average amount

10 MILLION PEOPLE HAVE FALLEN PREY TO SOME FORM OF IDENTITY THEFT IN THE PAST 5 YEARS. FEDERAL TRADE COMMISSION ESTIMATE

fraudsters spend in their victims' names, according to the FTC report, is \$10,200. The total loss to consumers due to identity theft has reached a high of nearly \$4 billion, with no signs of slowing. Businesses have lost an estimated \$33 billion due to such things as unrecovered merchandise and overhead to deal with the problem, the FTC says (see find.pcworld.com/44696 for the full report).

EASY MONEY

IDENTITY THEFT in general, and phishing in particular, can be lucrative, but such theft has grown so much recently for a simple reason: It's easy to pull off.

Jevans says thieves sell and swap phishing kits "with everything—fake sites, e-mails, responder software that'll sit on the server and send data to you. All you need to do is set up a server or get some zombies and stick it on them." (A zombie is a PC used without the owner's knowledge

to host malicious online activities.)

In some cases, Jevans says, the kits are simply "given away, just out of the badness of [these scammers'] hearts."

The rest is easy. Phishers simply send out mass e-mail to hundreds of thousands, or millions, of recipients and wait for a few unsuspecting people to respond.

Thieves face little risk. Many phishers set up shop in foreign countries, where it's harder for U.S. officers to nab them. Jevans estimates about 75 percent of phishing sites the group tracks are outside the country. And U.S.-based phishers often evade detection by using zombie PCs, or by constantly swapping server addresses.

New laws have helped a bit, experts say. Many state and federal statutes already cover identity theft with penalties of up to 15 years in jail; but in July, President George W. Bush signed legislation that further stiffened sentencing guidelines. Meanwhile, Senator Patrick Leahy ►

FIRST STEPS

Shield of Law: Victims' Legal Rights

» Credit bureaus must provide victims with three free reports and, on request, place free "fraud alerts" on their accounts to prevent further abuse, lasting 90 days to a year depending on the agency.

» Credit card firms can't hold you responsible for more than \$50 in fraudulent charges if you can show that your card or card number has been lost or stolen. And you're not liable at all if you can prove someone else created an account in your name. Banks offer similar protection, but many users with debit card fraud problems will find recovering money difficult, says Linda Foley, co-executive director of the Identity Theft Resource Center.

» Many services, such as PayPal, do not give you any liability protection—all you get is what your bank or credit card com-



pany provides with the debit or credit card you use to fund your account.

» Police should provide you with an incident report to be used as evidence when you are pleading your case to creditors. If the local police say they're too busy, try a sheriff or state police department. —B.T.

(D-Vermont) has proposed a law under which phishers could get up to five years for setting up a spoof site and sending fraudulent e-mail, thereby showing intent to commit a crime. (Currently phishers must net a victim in order to violate laws.)

Because roughly 20 percent of phishers are foolish enough to publicly register domains for their spoof sites, experts say such laws could have bite. And the U.S. Department of Justice has made some progress in fighting identity theft.

However, law enforcement officials say

\$1400

AVERAGE AMOUNT VICTIMS PAY TO CLEAR THEIR NAMES.

2003 IDENTITY THEFT RESOURCE CENTER STUDY

users can't rely on such deterrence measures to protect them, simply because too many criminals are using ever-morphing methods for authorities to keep up.

RECLAIMING YOUR NAME

FOR IDENTITY THEFT victims, fast detection is critical. According to the FTC, when victims discovered within one

month that their personal information was being misused, more than 90 percent were able to thwart the criminals from opening new accounts in their name, and incurred no monetary losses in the process. By law, consumers are limited to \$50 of credit card liability when their accounts have been compromised, and in many instances credit card companies waive even that amount. But when victims didn't discover the misuse for more than six months, 45 percent found that criminals had opened new accounts in their name. Nearly half of those victims were charged at least \$5000.

The first hurdle is perhaps the most galling: convincing credit card companies, credit reporting agencies, and sometimes even legal authorities that you are who you say you are. That process begins with obtaining a police report from the jurisdiction where the crime was committed. While it is usually easy to convince police that you are the victim and not the perpetrator—who, presumably, wouldn't step into a police department—getting a report is another matter.

Victims at times face resistance from local police when they ask for a report, with 28 percent of those who contacted police saying they were “very dissatisfied” with the response, according to an FTC survey. Getting the report is mandatory, even if you must go to different police departments, including local, county, and state offices. While there's little chance of police catching the thieves, you need the report to persuade financial institutions to clear your credit history.

Also, you should immediately contact the major credit agencies, Equifax (www.equifax.com, 888/766-0008), Experian (www.experian.com, 888/397-3742), and TransUnion (www.transunion.com, 800/916-8800), and request “fraud alert” status. Under a fraud alert (free to victims), companies that issue credit in your name are asked to call you before opening

SECURITY TIPS

How to Keep Identity Thieves at Bay

» **Don't click on links or images in unsolicited e-mail.** If a company with which you do business asks you to contact it, open a new browser window, type in the company's Web address, and log in to your account. Otherwise, call the company.

» **Use a good spam filter.** With the right filter, phishing e-mail messages may never even reach your inbox. Check out our list of top antispam tools in “Spam-Proof Your Inbox” from the June issue (find.pcworld.com/44698).

» **Install spyware detection software.** Lavasoft's Ad-Aware (find.pcworld.com/44236) and Spybot Search & Destroy (find.pcworld.com/43064) have versions that are free for personal and noncommercial use. These programs ranked at the top of their class in our June security superguide, “Bigger Threats, Better Defense” (find.pcworld.com/44700).

» **Consider a credit monitoring service from one of the major credit bureaus.** For \$44 per year, for instance, TransUnion's Identity Fraud Watch service sends weekly e-mail notices reporting changes to your credit profile. Equifax and Experian cost a bit more—\$100 and \$120, respectively—but they also give you access to your credit reports. Consumers in Califor-

nia and Texas can also request a “credit freeze,” whereby potential creditors access your credit report only with your authorization. (Each time you open your credit report to a potential creditor, it costs \$8 per agency, and another \$10 to freeze the report again.)

» **Review your credit card charges.** Fraudsters will often make small charges over a period of time to avoid detection.



» **Keep credit card information and so forth off your computer's hard drive.** Store such data on CD-RWs instead—and keep the discs out of your drive when you're not using them so hackers can't get at the data. If you must keep such data on your drive, protect it with something like Password Agent, which has a free limited version and costs only \$20 for an unlimited version (find.pcworld.com/44264).

» **Keep your Social Security number as private as possible.** If companies use it as part of your account number or ID card, request that the number be changed (but note that the companies are not obligated to make this modification).

» **Get a credit report twice a year.** As of December, federal law entitles consumers to one free, yearly report. —B.T.

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600 HOURS

AVERAGE TIME VICTIMS SPEND TO CLEAR THEIR NAMES AND CREDIT.

2003 IDENTITY THEFT RESOURCE CENTER

new accounts, so you can verify the validity of the credit request. Victims are eligible for free reports from each of the three major bureaus, as well. For extra protection, victims can extend the fraud alert status indefinitely beyond the initial period (90 days to a year, depending on the agency).

After contacting the agencies, sharpen your pencils and get ready to take a spin through the maze of corporate bureaucracy. You'll need to send letters and copies of the police report to fraud investigators—not to customer service representatives—at every company that issued credit to the identity thief.

The FTC's Web site includes a healthy section devoted to identity theft help (at www.consumer.gov/idtheft), including form letters for disputing new, unauthorized accounts. The Identity Theft Re-

source Center offers a compendium of information, sample letters, and other resources (www.idtheftcenter.org), as does the Privacy Rights Clearinghouse (www.privacyrights.org).

IdentityTheft.org, the Web site of attorney Mari J. Frank, also provides tips and sample letters, and sells a more extensive book of forms and advice called *Identity Theft Survival Kit* for \$80. She also wrote two other books on the topic.

Frank, who fell victim to an identity thief in 1996, says you should not get a lawyer unless credit issuers continue to hold you responsible for purchases you didn't make. "If you do all your work and they haven't done theirs, then go get an attorney. But if you just go to an attorney

at the start and say 'I'm a victim,' that's not enough," she says. "Unfortunately, this is a self-help process."

Victims who follow the process diligently can expect their credit to be cleared within months, depending on the timeliness of their letter-writing campaigns and the responsiveness of the various companies. At that point, they can go back to life as normal—only this time, with a considerably diminished sense of trust in the world around them. ■

Bob Tedeschi is an award-winning journalist and has written a weekly business technology column for the New York Times since 1998. PC World Senior Reporter Tom Spring contributed to this article.

UTILITIES

Don't Get Reeled In: Antiphishing Tools

WE TOOK AN INFORMAL look at a few utilities that claim to help you tell fake sites from the real deal to see how well they work. None is a panacea, but the tools are a good first step. Note that some online stores and financial services now offer their own tools, as well, such as EBay's Account Guard software on its downloadable toolbar (find.pcworld.com/44686).

» **CoreStreet SpoofStick:** Free toolbar extension to Internet Explorer and Mozilla Firefox browsers; find.pcworld.com/44690

What it does: This toolbar prominently identifies the URL of the Web site you are visiting. The tool worked well for the suspicious, all-numbers address of the phishing site I tried, but this approach won't be as effective if thieves use a clever URL that closely mimics the legit company's own address. And SpoofStick won't alert you to scams that direct you to a legit site but open a pop-up window to get your data, because pop-ups can't show its toolbar.

» **EarthLink ScamBlocker:** Free toolbar for most browsers; find.pcworld.com/44694

What it does: ScamBlocker keeps a list of known fraudulent sites and redirects you to an alerts page on EarthLink's servers when you try to access such a site. This

was the only tool that identified a known phishing site and prevented my browser from loading it. But its effectiveness depends on a current and complete list.

» **GeoTrust TrustWatch:** Free toolbar for IE 5.x and later; find.pcworld.com/44688

What it does: This program monitors the sites you visit and rates their safety with a color code: green for safe, yellow for caution, and red for known fraud site. In my trial of a beta version, most sites came up yellow, which quickly desensitized me to the alert, and it failed to catch a known phishing site I visited. Like SpoofStick, this program won't alert you to scams that use pop-ups because pop-ups can't display its toolbar.

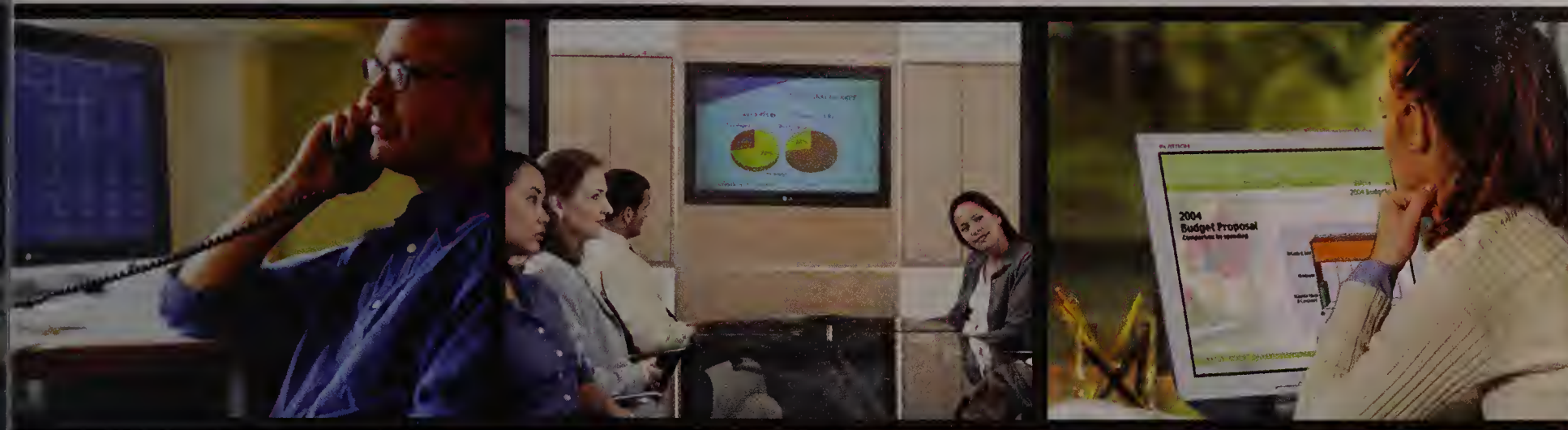
» **WebRoot Phish Net:** Free program, compatible with Internet Explorer 5.5 and later; find.pcworld.com/44692

What it does: You input your sensitive



data—including passwords, bank account and Social Security numbers, and user names—and Phish Net encrypts and stores that data on your PC so that it can tell when you're divulging info. It monitors you online, checking for visits to known phishing sites. The tool alerts you when you type in sensitive data at an unknown site or one known to be fraudulent. I looked at a beta version that did not have access to the list of blocked sites, but it still warned me against sending information to the phishing site I visited because the site was not on the Trusted list; you can override this if you know a site is legit. —Tom Spring

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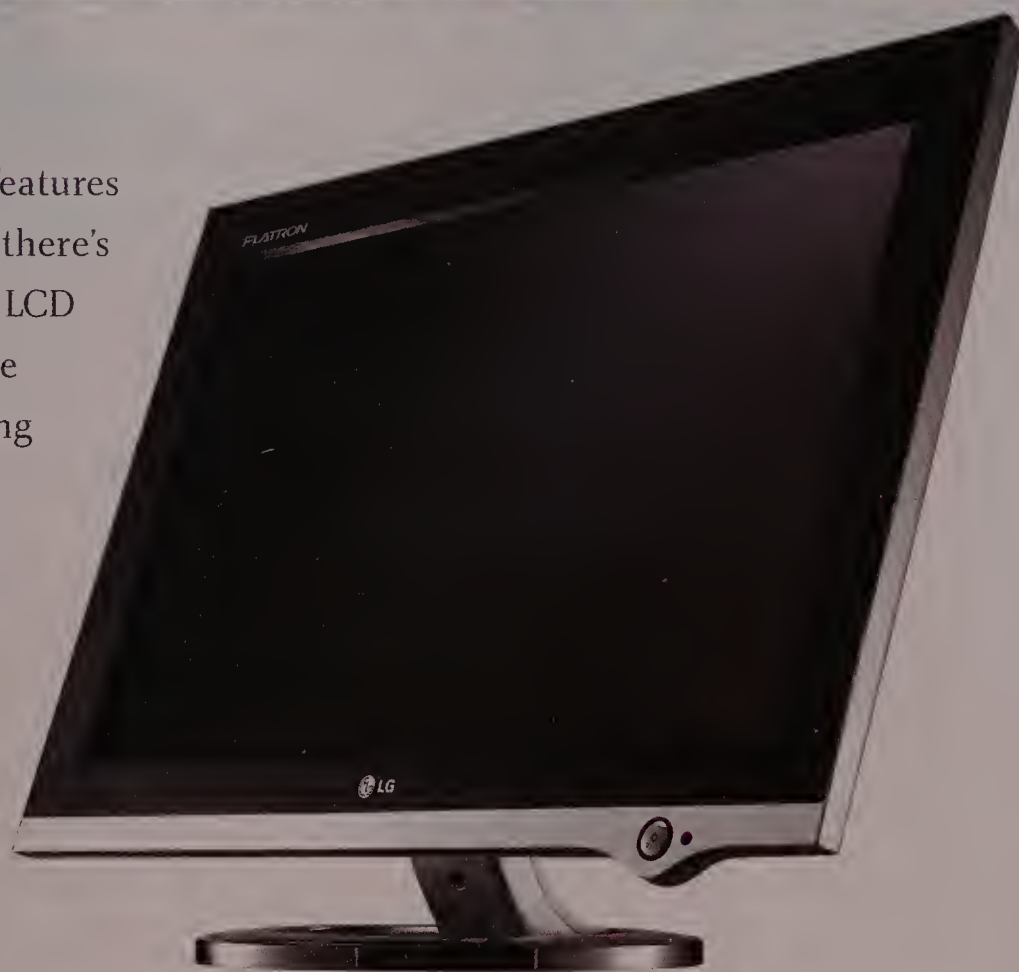
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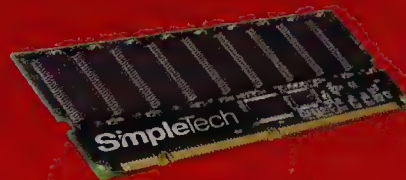
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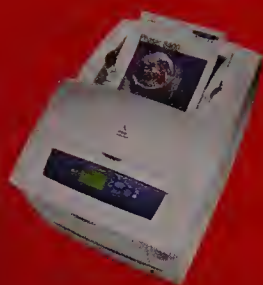
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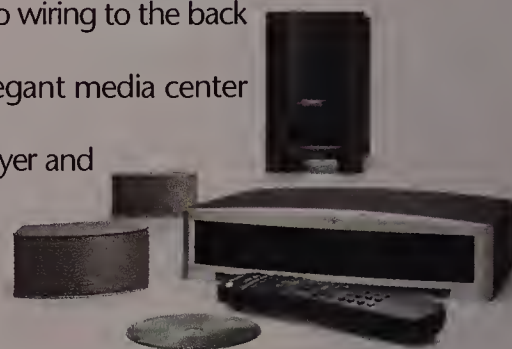
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Music, video, or both?

We try slick new iPod rivals, the first Portable Media Centers, and other handhelds to see which pack the most fun into a portable package.

BY SAM JEMIELITY

IT CERTAINLY FEELS LIKE we're living in an iPod world these days. Apple has done a lot to make portable audio players the must-own tech toy of the decade; but while we still admire the iPod, it's not the only game in town. Competing audio players now display tons of different forms and innovative features. And there's an entire new frontier opening: video. Snazzy handhelds based on Microsoft's new Windows Portable Media Center operating system allow you to enjoy Jon Stewart's jokes on *The Daily Show* during your commute. We rate 20 audio and video players that are likely candidates for amusing yourself while you're on the move. ►

LET'S PLAY:

From top, iPod Mini, Creative Zen Touch, and iRiver PMP-120.

I tested a stack of audio players for functionality, ease of use, audio quality, portability, size, price, and style. Depending on the device, you can record MP3s from your favorite CDs, listen to FM radio, save your brilliant business ideas via voice recording, and keep your vacation photos handy. The Apple iPods even hold your personal calendar and address book.

But it isn't just about music anymore. Now, with the debut of Microsoft's Portable Media Center operating system, video fans can enjoy ultraportability, too. The PMC OS powers a whole array of interesting new handheld devices—from Creative, IRiver, and other vendors—sporting 3.5- to 4-inch color screens and 20GB or larger hard drives that enable you to play your favorite TV shows, personal videos, and selections from your music collection—anywhere.

The attractive design of most of these little PMC-based players is sure to make them highly buzz-worthy items this holiday season. But their price (about \$500) and their unresolved rough edges—which prevent watching video on the go from being as easy as listening to music—probably will keep them from emerging as bona fide hits. *PC World* Senior Associate Editor Richard Baguley looked at two PMC players and at four video devices that don't use the Portable Media Center OS but nevertheless seem able to play back television and music just fine. Check out "Focus on TV," his roundup of these products, which begins on page 119.

APPLE'S
40GB iPod
(left) and Rio's
20GB Karma.



PLAY THAT FUNKY MUSIC

THE MUSIC PLAYERS that I tested fall into three categories. Large-capacity players come with 20 gigabytes or more of storage and can hold 5000 songs (each song being a 128-kbps, 4-minute MP3 file, the standard throughout this review). This is the category you should be scruti-

FEATURES COMPARISON

Large and Midcapacity Audio Players

IF 20GB OR MORE OF MUSIC MAKES YOU SALIVATE, buy big. Will a unit that holds up to 1250 tunes do? Try a midcapacity player.

	LARGE-CAPACITY PLAYER	Street price	Capacity	Battery life ¹	Weight (oz)/ dimensions (w x d x h)	Features/ ease of use	Formats supported	Comments
1	Best BUY Apple iPod ★★★★★ find.pcworld.com/44988	\$399	40GB	12	6.2/ 2.4 x 0.7 x 4.1 inches	Outstanding/ Outstanding	AAC, AIF, Apple Lossless, Audible, MP3, MP3 VBR, WAV	Quick Click Wheel navigation; doubles as portable hard drive; intuitive menus; easy playlists; battery life could be better.
2	Creative Zen Touch ★★★★☆ find.pcworld.com/44238	\$250	20GB	24	7.0/ 4.1 x 0.9 x 2.7 inches	Outstanding/ Very Good	MP3, WMA	User-friendly interface; on-the-go playlists; slightly touchy touchpad; unique "find" feature retrieves tracks easily.
3	Rio Karma ★★★★☆ find.pcworld.com/40943	\$300	20GB	15	5.5/ 3.0 x 1.1 x 2.7 inches	Outstanding/ Very Good	MP3, FLAC, WMA, Ogg Vorbis	Line-out for home stereo output; unit adapts to lefties; supports many digital formats; lacks in-line recording capability.
4	Philips HDD120/17 ★★★★☆ find.pcworld.com/44990	\$350	20GB	10	5.9/ 2.5 x 0.8 x 4.2 inches	Very Good/ Good	MP3, WMA	MP3 and voice encoding; "match genre" equalizer; MP3 encoding; slow navigation menu; screen is somewhat dark.
5	JetAudio iAudio M3 ★★★★☆ find.pcworld.com/44992	\$349	20GB	14	4.8/ 2.4 x 0.6 x 4.1 inches	Very Good/ Good	MP3, Ogg Vorbis, WMA	Ultraslim shape; MP3 and voice recording; FM radio; awkward wired remote-control buttons; no LCD screen on the main unit.
	MIDCAPACITY PLAYER							
1	Best BUY Rio Carbon ★★★★★ find.pcworld.com/43870	\$249	5GB	20	3.2/ 2.5 x 0.6 x 3.3 inches	Very Good/ Outstanding	MP3, WMA, Audible	Ultracompact; large capacity; user-friendly controls; bright LCD display; long battery life; can't make playlists on the go.
2	iPod Mini ★★★★☆ find.pcworld.com/44994	\$249	4GB	8	3.6/ 2.0 x 0.5 x 3.6 inches	Very Good/ Outstanding	AAC, AIF, Apple Lossless, Audible, MP3, MP3 VBR, WAV	Easy Click Wheel navigation; simultaneous browsing/playback; well-designed iTunes interface; battery life could be better.
3	Rio Nitrus ★★★★☆ find.pcworld.com/38456	\$160	1.5GB	16	2.7/ 2.4 x 0.6 x 3.0 inches	Good/ Very Good	MP3, WMA	Easy-to-use menus; ultracompact; bright LCD display; touchy joystick; can't play back during browsing; great battery life.
4	Sony MZ-NHF800 ★★★☆☆ find.pcworld.com/44996	\$220	1GB minidisc	25	12.7/ 3.2 x 1.1 x 3.2 inches	Good/ Good	ATRAC3plus ²	Removable minidisc storage; AM/FM tuner; flywheel navigation; wired remote; sluggish software and file loading.

FOOTNOTES: ¹ Maximum battery life promised by manufacturer, in hours. ² Use Sony software to convert MP3 format to ATRAC3plus.

nizing if you want to have all or most of your music with you at any time.

If you'd be satisfied to carry a skimpier collection of several hundred albums with you constantly, investigate the midcapacity players. These have between 1GB and 5GB of hard-drive space and hold up to 1250 songs. Just want access to a few hours of tunes while you jog or commute? Grab a gum-pack-size flash-memory player with 128MB to 512MB of storage and load up to 120 of your favorite MP3s.

One thing that every buyer of a new player—whether it be audio or video—should consider is its compatibility with Microsoft's new Windows Media Digital Rights Management 10 technology. Windows Media DRM 10 is designed to allow downloads from subscription-based services to move securely to portable players, which makes these services much more flexible and attractive than before. Microsoft has launched a new "Plays For Sure" campaign designed to make it easy to tell whether the player and service you want to use will work well together. Information on "Plays For Sure" is available at find.pcworld.com/44846.

If this Microsoft technology catches on, it could mean a whole new world of legal digital content, including movies, for you to load onto qualified portable players.

Players That Loom Large

FIRST, A LOOK AT the big guns in music players: those with hard drives. This category includes both large-capacity (20GB to 80GB) and midcapacity (1GB to 5GB) models. Even though they're based on similar technology, the two types suit significantly different lifestyles. Do you see yourself adding several new CDs to your player each week? If so, go with a large-capacity player. Even serious music collectors will take some time to max out 20GB or more of storage: The 5000-song capacity of a 20GB player translates into 500 ten-song albums.

But how often do you listen to your entire music collection? If all you need is your 20 favorite CDs, you can save up to \$200 and tote less weight by using a mid-capacity player. Both the Apple iPod Mini and Rio Carbon can hold 1000 or more songs. You'll appreciate having a smaller unit, especially if you carry it every day.

But large-capacity players aren't necessarily bulky. Even the player I tested that had the largest hard drive—the Neuros II, with its 80GB "backpack" clip-on hard drive attached—is physically smaller than the average portable CD player.

APPLES AND OTHERS

INDEED, CAPACITY-TO-SIZE ratio is one big reason why I chose the Apple iPod as the *PC World* Best Buy among large-capacity players. The \$399 iPod that I tested packs a whopping 40GB into a case smaller than those of several rivals that have half its capacity, like the Philips HDD120/17 and the Rio Karma.

No player is more user-friendly. The iPod's menu selections are intuitive, and its touch-sensitive Click Wheel makes navigation a breeze. The iTunes software and iTunes online music store are easy to understand and use. On the player itself, you make a few quick clicks, and you have a playlist of your favorite songs. Creating playlists is equally easy on the Karma, but somewhat less so on the Creative Zen Touch. Other large-capacity players I tested made the task a lot more difficult.

The slightly bulkier 20GB Zen Touch also wowed me with its multiple playlist formats, FM recording, and blue-lit backscreen. The \$250 Zen's one-thumb navigation system is relatively simple to use, although I suggest that you set its hypersensitive keypad to "low."

If you are a lefty, look into the 20GB Rio Karma, which gives you the option of switching to intuitive southpaw manipulation. You can navigate with either a joystick (which I found somewhat uncomfortable to use) or a wheel that functions like a scroll wheel on a computer mouse. It has a large, bright screen and simple on-the-fly playlist creation. This \$300 ►

PORTABLE VIDEO PLAYERS

FOCUS ON TV

Want to take video with you? Portable media players let you enjoy both video and audio.

VIDEO-CENTRIC devices that sport large color screens and big hard drives have arrived; some of the very latest are based on Microsoft's new Windows Portable Media Center operating system. The PMC OS interface is the same one that a Windows XP Media Center Edition PC uses. This simplifies matters—particularly if you already own such a computer—since they're designed to work in tandem. The players rely on Microsoft's Windows Media Player 10 software to sync the devices with digital media stored on the Media Center PCs. Here, in descending order of how much we liked them, is *PC World's* take on six video players—two PMC-based and four that use a variety of non-Windows operating systems.



IRiver PMP-120

Price: \$500

Preproduction unit, not rated

THE IRIVER PMP-120 has the best design of the models we tested. Its side grips fit naturally in the hands, and skipping over recorded TV ads is easy. The 3.5-inch screen is bright and the unit's battery is removable. On the downside, we heard a slight but annoying noise during hard-drive accesses, noticed jerkiness in some videos, and could

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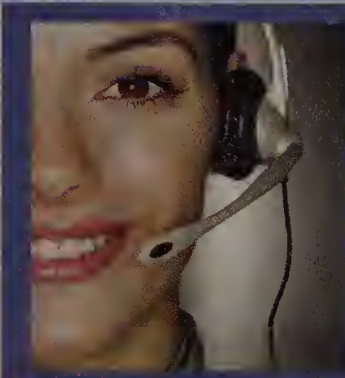
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- Bob

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- David

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- Sarah

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player is chunky compared to our top two, but it does have the appealing Rio DJ feature, which enables the unit to select songs according to a few simple rules and play them back for as long as you like.

Across the board, transferring music to these players was simple. With Apple's iTunes, transferring songs (or one of 5000 audiobooks available for purchase at the music store) to the 40GB iPod is an easy drag-and-drop operation. The Rio Karma, Creative Zen Touch, and other non-Apple players I looked at play back standard MP3, WMA, and WAV files; with them, using Windows Media Player to load songs is often easiest.

Philips's HDD120/17 is an elegant-looking black-and-chrome unit with several handy functions lacking on the iPod, Karma, and Zen Touch. Unlike the top two large-capacity players, the Philips can encode (MP3-speak for record) voice or music without involving a PC. This is a great feature, but it doesn't overcome my sense that the player lags behind the iPod and the Zen Touch in ease of use.

Is Midsize a Compromise?

THEN AGAIN, not everybody feels the need to access 5000 songs at the touch of a button. Midcapacity audio players, with 1GB to 5GB hard drives, tend to be more compact than their big-gig siblings—it's approximately the same size difference as the one between a deck of cards and a business card holder. From my evaluation of the 40GB iPod, it should be obvious that I loved the \$249 iPod Mini as well. Despite its waifish 3.6-ounce weight, the Mini offers a spacious 4GB of storage and the same Click Wheel I liked on the regular-size iPod. And no other player can top the Mini in sheer style, with its anodized-aluminum case, slim profile, and eye-catching color options.

Nevertheless, the new apple of my eye

MIDSIZE:
Rio's 5GB Carbon.

and the Best Buy in the middle category, is the 5GB Rio Carbon, which can hold 1250 tunes. When the first iPod arrived on the scene, conventional wisdom maintained that it was better than anything else and hence justified its higher price, while the competition was cheaper and had fewer features. With the \$249 Carbon, Rio decided to go head-to-head with Apple's Mini on merit, price be damned. Though both cost the same, the metallic-gray Carbon, smaller and thinner than a typical cellular flip phone, packs a 5GB hard drive. That translates into 25 percent more space than the Mini has.

The wedge-shaped Carbon fits comfortably in your palm, has excellent sound quality, provides a bright LCD screen, and is easy to manipulate one-handed. Some users have reported that their Rio Carbons produce static when connected to headphones with a metal jack. Buying new headphones with a plastic connection or applying some electrical tape to the area around the metal jack should fix the problem.

If you want to search for your next song while the current one is playing, you'll need a player that can multitask—and not all do. Both the Mini and the Carbon, however, permit you to browse down to a song within an album or under an artist name without interrupting playback.

Though you have to buy an adapter to add voice-recording capabilities to ►



VIDEO PLAYERS CONTINUED...

barely hear the built-in speaker over ambient noise while in a car on the freeway. Nevertheless, the PMP-120, which runs the Windows PMC OS, was our favorite of these six video players.



Creative Zen Portable Media Center

Price: \$499

★★★★☆

THIS WINDOWS PMC player has the largest screen of the devices we looked at, but it's also the biggest (at about 6 by 3.2 by 1.1 inches) and the heaviest (at 12 ounces). The Zen's 3.8-inch screen looks great, and I could see it in all lighting but the brightest direct sunlight. My test videos played back with only very occasional jerkiness. But this device is a little bit awkward to hold, and could cause discomfort in your hands when you're watching longer shows.



Apex MP-2000

Price: \$399

★★★★☆

THE APEX MP-2000 IS, at 0.8 inches thick and 8.5 ounces, among the thinnest and lightest players I tested, and it fits well in the hand. However, it lacks video-conversion software, so you'll need to use a program like Dr. Divx (www.drdivx.com). The MP-2000's 3.5-inch screen displays strong, deep colors, but an obvious grid pattern overly-

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ViewSonic

the Mini, the Carbon works as a voice recorder out of the box (regrettably, it doesn't have a line-in jack for encoding MP3s from an external mike or CD player). And Rio's estimate of 20 hours of battery life dramatically tops the 8 hours Apple promises for the Mini. My only real disappointment with the Carbon is that you can't make playlists on the go, an attractive and easy-to-use feature of the Mini. Still, the Carbon's extra storage space and significantly better battery life make it the master of this class.

BOOK IT

HERE'S A FINAL FACTOR to consider when comparing audio players: One increasingly popular use of audio players that have a large enough storage capacity is for playing audiobooks. After all, would you rather carry Bill Clinton's 900-page autobiography around or download it into a player for the same price? The Carbon, both iPods, and the Creative players I tested are all AudibleReady, meaning that they support the Audible digital audiobook format (not all digital audio players do, so check for this before you buy). Audible sells a huge selection of digital audiobooks at its own Web site (www.audible.com), and a great many are available at the iTunes online music store, too.



FLASH FRENZY: From left, Samsung YP-T5V, JetAudio IAudio 4, IRiver IFP-790.

In a Flash

LIKE THE IDEA of jogging while listening to your favorite 100 songs on a player the size of your thumb? If so, you'll enjoy an ultracompact audio player based on flash memory, which allows designers to shed more bulk from these products than Atkins fanatics shed pounds.

These diminutive units weigh only a few ounces at most, but they gain portability at the expense of storage capacity. Players I tested in this category hold anywhere from 30 songs (on a unit with 128MB of memory) to 240 songs (on a 1GB expandable model such as the Rio Forge Sport). Flash players may be small, but when it comes to finding one that fits your needs, the pickings are hardly slim. Despite their compact size, you'll commonly find additional features like storage for files other than music, FM radio, and voice recording—having multiple options makes commuting or working out less boring.

Since these players have a much smaller capacity than hard-drive-based devices do, you'll need to swap in a new group of songs when, say, you tire of the existing batch after a few trips to the gym. For that reason, ease of transfer is crucial with these tiny things. I had little trouble getting up and running with all five players that earned spots on the chart (though I opted to use Windows Media Player to work with the Yepp YP-T5V after getting frustrated with Samsung's software).

The Best Buy in this category is the \$160 IRiver IFP-790, a tubular, cherry-red player that's stylish, sporty, and—most important—very substantial. The IFP-790 boasts 256MB of flash memory, and it's geared to the active lifestyle, with an included sports armband. Features such as MP3 and voice encoding, and an easy-to-read display seal the deal. ▶

VIDEO PLAYERS CONTINUED...

ing the image makes it look grainy. On-screen menus are adequate, but there's no help menu and the manual is rather poor. The MP-2000 does not use Microsoft's operating system.



Archos Gmini 400n

Price: \$399

★★★★☆

THE GMINI 400N, another non-PMC OS device, is small enough to fit into a shirt pocket, yet it has a 20GB hard drive, the ability to record MP3 audio, and a CompactFlash slot. It can copy memory card files to its hard drive, so you can back up your digital camera. A remote control with an FM radio is available, as is an adapter that adds Memory Stick and SD Card slots. But I found that extended television viewing on its 2.2-inch LCD screen became wearisome.



Archos Pocket Video Recorder AV420

Price: \$550

★★★★☆

THE 20GB AV420 is more than just a media player—it records video, too. It also lets you control another device, such as a cable box, while it serves as a VCR. This means you can record TV without having to use a PC, but you can't use the device while recording.

It's okay if parts of your vacation are tedious and boring. Just don't let the same thing happen to your vacation movie.



Introducing Pinnacle Studio™ Plus. Vacations aren't always wall-to-wall fun. Neither are unedited vacation videos. But with Pinnacle Studio Plus, cutting out the tedious bits is simple.

As in "point, click, drag and drop" simple. Our intuitive, easy-to-use interface makes video editing as effortless as writing a postcard. If you want to add some pizzazz—like special effects or ready-to-watch DVDs—Pinnacle Studio Plus makes that easy as well. Little wonder we're the leader when it comes to home video editing solutions. To learn how to make great home movies and to download a valuable Pinnacle Studio Plus coupon, visit www.StudioHowTo.com/3

Available at: Best Buy, Circuit City, CompUSA, Fry's Electronics and Micro Center.



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A close second is JetAudio's \$220 IAudio 4, which packs 512MB of memory into an elegant silver unit. Treadmill regulars will appreciate the IAudio 4's sleek, comfortable armband setup. It has the basic features covered (MP3 encoding and so on) and offers great sound quality. I got a little frustrated with the JetShell software, and the unit's small buttons can make adjusting on the fly difficult, but those are minor quibbles.

Not far behind is Samsung's Yepp YP-T5V. The size of a small lipstick case, the \$150 YP-T5V has an exceptionally user-friendly design. Its intuitive joystick navigation means that you don't even need to look at the player to skip through songs or adjust volume. The sleek blue player's cheap plastic carrying case seems chintzy, however, and the lack of a sports armband is a drawback for the athletically inclined. Samsung does include a leather strap for hanging it around your neck.

Gym rats might also consider the \$200 Samsung Sports Yepp YP-60V, a model that missed the chart because it sacrificed music options in favor of sports and fitness features. The YP-60V's heart-rate monitor, stopwatch, calorie counter, and exercise progress tracking—with music thrown in—will appeal to some users.

The \$160 Rio Forge Sport has an easy-to-read screen, and its ergonomic design lets you manipulate the device with one hand. For about \$100 you can buy an SD Card or MultiMediaCard that expands the Rio's capacity from 256MB to 1GB. The company says that it hasn't received any complaints from users about the Sport slipping out of its armband while in use, but I had difficulty getting mine to stay put.

AT HOME IN THE OFFICE

ONE PLAYER not aimed at the Stairmaster set is Creative's elegant \$110 MuVo Slim, which would be more appropriate in the boardroom than in the weight room. Packing 256MB of memory into an ultraskinny, credit-card-like design, the MuVo Slim comes with a leather carrying case. Figuring out its folder/subfolder navigation of music and other files takes a while, and people with large hands may find that manipulating its tiny buttons is a problem. But if your latest brainstorm catches you without pen and paper handy, you can use the MuVo to record and play back voice memos almost effortlessly. ■

Sam Jemielity is a music editor for AOL City Guide. He is based in Chicago. Richard Baguley is a senior associate editor for PC World.

VIDEO PLAYERS CONTINUED...

The screen is large enough for comfortable viewing, though it isn't particularly bright. Video played back smoothly, but the colors looked flat. The AV420 doesn't use the Windows PMC OS.



Zvue Player

Price: \$220 (\$150 for the player, \$70 for a 512MB SD Card)

★★★★☆

THE ZVUE uses SD Cards; one 512MB card holds up to 8 hours of content (versus 80 hours for a hard-drive device). Not a PMC, the Zvue has no video inputs; its maker offers free downloadable software that converts video from a variety of formats. The Zvue's screen is small, and the video produced by the software looks blocky. Its display is bright, however, and the color is decent.

—Richard Baguley

FEATURES COMPARISON

Byte-Size Flash Players With Big Sound

THESE TINY DEVICES WON'T WEIGH YOU DOWN, but the amount of music they hold is also on the small side.

	PLAYER	Street price	Capacity	Battery life ¹	Weight (oz)/dimensions (w x d x h)	Features/ease of use	Formats supported	Comments
1	Best BUY IRiver IFP-790 ★★★★★ find.pcworld.com/44998	\$160	256MB	40	1.3/ 1.3 x 1.0 x 3.4 inches	Outstanding/ Outstanding	ASF, MP3, Ogg Vorbis, WMA	MP3 and voice recording; doubles as portable storage; FM tuner/recorder; simultaneous browse/playback capability.
2	JetAudio IAudio 4 ★★★★☆ find.pcworld.com/45000	\$220	512MB	15	5.2/ 1.3 x 3.0 x 0.7 inches	Very Good/ Very Good	MP3, VBR, WAV, WMA	Direct MP3 encoding; voice recording; FM radio; its tiny buttons and playlist creation are difficult to use.
3	Samsung Yepp YP-T5V ★★★★☆ find.pcworld.com/45006	\$150	256MB	15	0.9/ 2.1 x 0.9 x 0.9 inches	Very Good/ Very Good	MP3, WMA, Secure WMA	Intuitive joystick navigation; MP3 and voice recording; ultra-tiny size; use for portable storage.
4	Rio Forge Sport ★★★★☆ find.pcworld.com/45008	\$160	256MB	20	2.2/ 2.7 x 0.9 x 2.5 inches	Very Good/ Outstanding	Audible, MP3, WMA	Easy one-hand navigation; expandable to 1.25GB; FM tuner and FM record; stopwatch; uncomfortable headphones.
5	Creative MuVo Slim ★★★★☆ find.pcworld.com/42908	\$110	256MB	17	1.6/ 3.4 x 0.3 x 2.2 inches	Very Good/ Good	Audible, MP3, WMA	Jog button navigation; impressive size/memory ratio; easy voice recording and playback; tiny buttons can be a nuisance.

FOOTNOTE: ¹ Maximum battery life promised by manufacturer in hours.



AMD SempronTM 2400+
Socket A 1.667GHz
256KB L2 Cache
Model# SDA2400BOX

\$65⁰⁰



AMD SempronTM 2600+
Socket A 1.833GHz
256KB L2 Cache
Model# SDA2600BOX

\$88⁰⁰



\$245⁰⁰

AMD AthlonTM 64 3400+
512KB L2 Cache
The Only 64-Bit Windows
Compatible Processor



\$299⁰⁰

AMD AthlonTM 64 3500+
512KB L2 Cache
64-Bit Processor Socket 939
Model# ADA3500AWBOX



\$849⁰⁰

AMD AthlonTM 64 FX-55
1MB L2 Cache
64-Bit Processor Socket 939
Model# ADAFX55ASBOX



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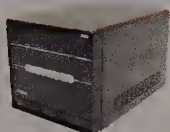


Barebone Systems



\$149⁰⁰

Biostar IDEQ 210V for
Socket A AMD FSB 400MHz



\$325⁰⁰

Shuttle SN95G5 XPC for
Socket 939 AMD Athlon 64 CPU



Asus A7VT Terminator
for Socket A AMD
Sempron CPU

\$99⁰⁰

Video Cards



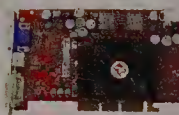
\$388⁰⁰

eVGA GeForce 6800GT
256MB GDDR3 256-Bit 8x AGP



\$209⁰⁰

Sapphire RADEON 9800 Pro
128MB DDR 256-Bit 8x AGP



\$159⁰⁰

PowerColor RADEON 9800 Pro
EZ 128MB DDR 128-Bit - OEM

Memory



\$295⁰⁰

Corsair XMS Xtra-Low
Latency 184-Pin 1GB (512MBx2)
DDR SDRAM PC3200



\$235⁰⁰

Mushkin 1GB(512MBx2)
184-Pin DDR Level One Dual



\$165⁰⁰

Kingston ValueRam 240-Pin
512MB DDR2 PC2-3200

CD/DVD Burners



\$125⁰⁰

Sony DRU710A 16x DVD±RW
Dual Layer Internal Drive



\$104⁹⁹

Plextor PX-712A 12x DVD±RW
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NEC ND-3500A BK 16x DVD±RW
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World's smallest/lightest high-resolution camcorder and camera **combination!**



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Take DVD-like quality digital video. Take 3.2 mega-pixel digital still pictures. Or take both at once! The Fisher CameraCorder™ is an all-in-one marvel (just 5.4 ounces) that has its own high-performance movie making and still picture software. Use the memory card in your PC or Mac or through the camera/docking station to connect to the USB port for fast downloading. Edit video or still material for transfer to DVD, video CD disc or email attachment.

New MPEG-4 technology optimizes the storage capacity for DVD-like

quality video (30 frames/sec.). The Fisher CameraCorder™, which includes a 512-megabyte card, can store 1/2 hour of DVD-like video or over 3,900 photos.

Take it anywhere and be ready for any video/photo opportunity.

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The Apple Store

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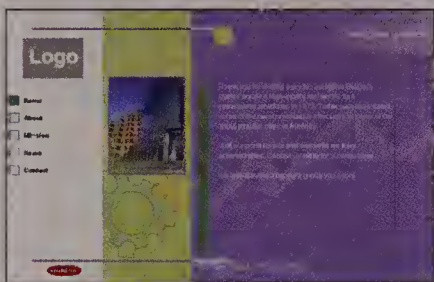
SANYO

Flash Dance

1&1 Internet makes it easy to build interactive and dynamic Web pages.

»»» A LOT OF SMALL-BUSINESS owners and individuals feel caught between a rock and hard place when it comes to their Web sites. They want their sites to be dynamic, lively, and feature rich. But they often feel they don't have the expertise to design exciting sites, or the money to pay someone else to do it.

For these businesses and individuals, the experts at 1&1 Internet Inc. (www.1and1.com) have a message: When it comes to building and maintaining a world-class, exciting Web site, *no experience is needed!*



Say goodbye to static HTML pages with DynamicSiteCreator.

Thanks to 1&1's innovative new interactive tools, small businesses, SOHO enthusiasts, and individual users can create professional-looking flash sites, rich with animated pages. They can also turn their PDFs into fully functioning Web pages with unprecedented ease and without any prior

programming knowledge. These new and unique features are available at no additional charge to 1&1's Shared Hosting and Managed Server customers.

Flash without the fuss

With DynamicSiteCreator, businesses can say goodbye to static HTML pages and usher in an era of animated, interactive flash pages—with no flash programming skills required. Flash brings movement, sound, style, and an element of surprise to your Web site with animated graphics, interactive menus, and brilliant color.

DynamicSiteCreator features a helpful wizard that makes easy work of building flash pages as well as offering easy-to-use templates that can be adapted to meet the unique needs of any site.

New life for PDFs

If yours is among the many businesses, clubs, or associations that have created brochures, catalogs,



or other documents in PDF format, 1&1's PDF2Web Converter gives these PDFs a second life at no extra cost and no big effort.

PDF2Web Converter lets you easily convert these PDFs into high-performing Web pages with nothing more than the click of a mouse.

With PDF2Web Converter, even Internet novices can quickly and easily convert PDF files into professional-quality, fully functioning Web pages. Once your site is converted, you can link it to other Internet addresses, create links within it, and integrate Web pages smoothly and flawlessly into existing sites. And you can use scrolling to accommodate double-sided PDFs.

More interaction in store

Further enriching the interactive Web experience are several other tools from 1&1 Internet. For instance: In2site Live Dialogue from 1&1 allows for quick and easy communication with your visitors—live and in real time—making it an invaluable tool for sales, support, and consulting professionals. These same professionals and others as well will also appreciate the "high-touch" potential of the 1&1 Newsletter Tool, which lets users create and send professional-looking e-mails, but with absolutely no programming headaches.

Meanwhile, 1&1 WebElements lets users easily add template-driven contact forms, online polls, event registrations, and more to their sites. And the Chat Channels interactive tool provides a customer meeting place and adds entertainment value to your site—with no software downloads required.

■ For further information on 1&1, or to learn more about the ease with which you can get a functioning Web site up and running, please pay a visit to www.1and1.com.

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Andreas Gauger
Chairman of
the Board



1&1 Interactive Tools: Defining Sophistication

Let 1&1 help you achieve your maximum online potential. We offer one-stop shopping and the most complete hosting solutions, at some of the most affordable rates in the industry.

As the world's largest and fastest growing web host – with four advanced Data Centers, 25,000 high-end servers, 4.4 million domains registered worldwide, and 3.15 million global customers – 1&1 is able to continuously provide our customers with the best innovations in web hosting.

We are proud to offer the new 1&1 Interactive Tools, a suite of easy-to-use features designed to help you establish a more productive and sophisticated online presence, more easily than ever.

With the 1&1 Interactive Tools you'll receive impressive, unique features that require no programming knowledge or experience. Build an interactive flash-animated site and intrigue your visitors. Convert a PDF brochure into a fully functioning website. Communicate with your site visitors, live and in real time. Create and send professional looking e-mail newsletters. It's easy, it's all included, and it's just the beginning of what you can accomplish online with 1&1.

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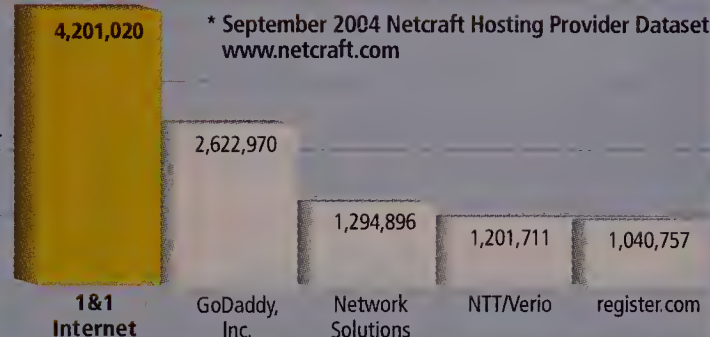
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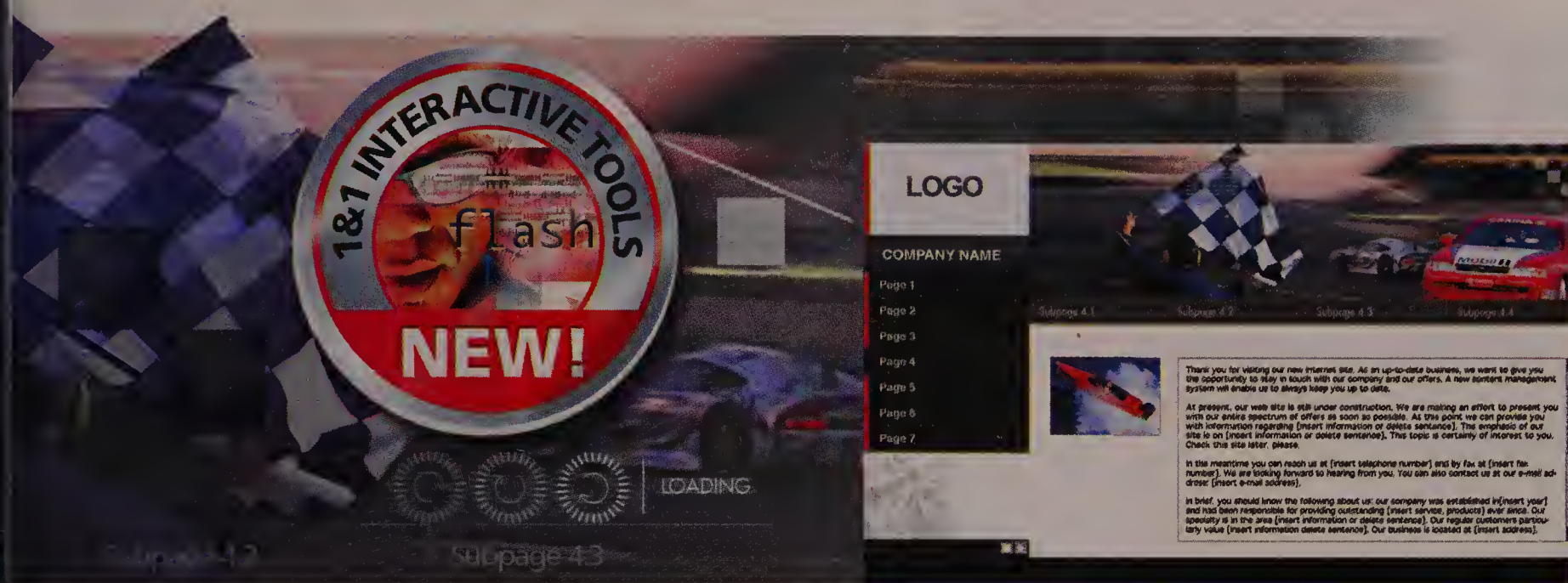
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DynamicSiteCreator gives you the power to astonish your visitors with visual effects that add movement, intrigue and excitement. Animated graphics, interactive menus, brilliant color and vibrant sound – flash applications take your site to a whole new dimension.

Easy & Customizable

With DynamicSiteCreator, you get easy-to-use templates that can be quickly adapted to meet your site's unique needs. In just a few steps, the DynamicSiteCreator wizard helps you build a fascinating, dynamic website!

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Build your animated site without breaking the bank! The DynamicSiteCreator is included when you sign up for any 1&1 Shared Hosting Plan or Managed Server. Plus, you'll have easy and convenient access right from your Control Panel.

Create your Flash Site in Minutes

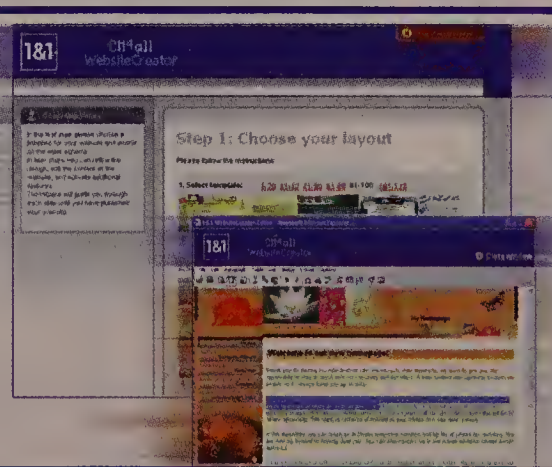
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The Digital Dynamic

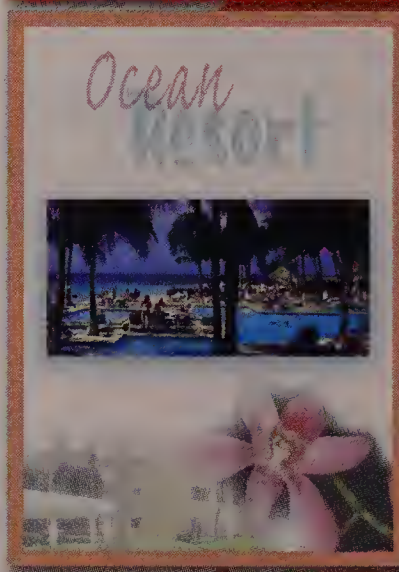
Today, most printed materials – including brochures, flyers, and other business documents – originate as digital files. Your printed piece can be saved in digital form as a PDF file, which can be opened and viewed on your computer using a program such as Adobe® Reader®.

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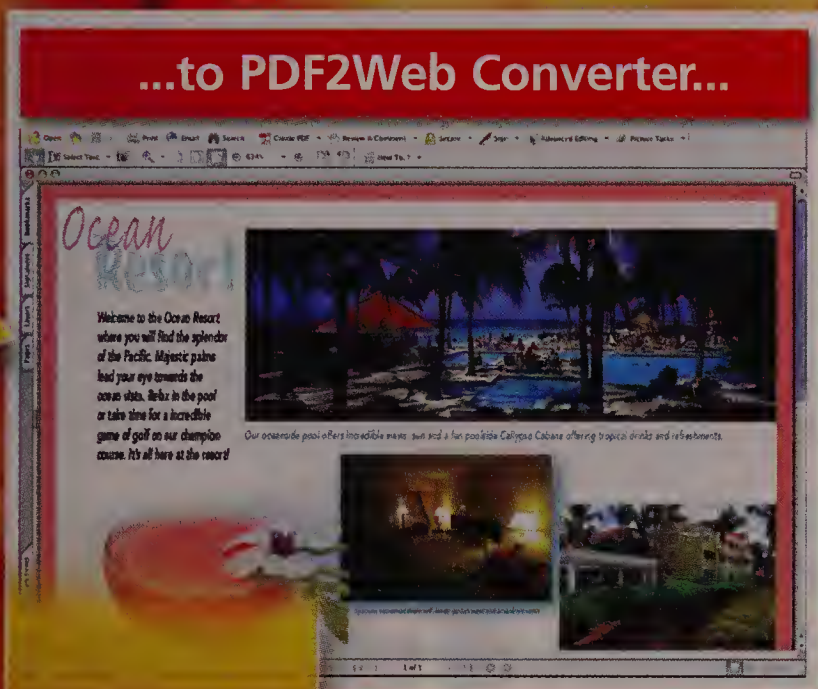
From a print brochure...



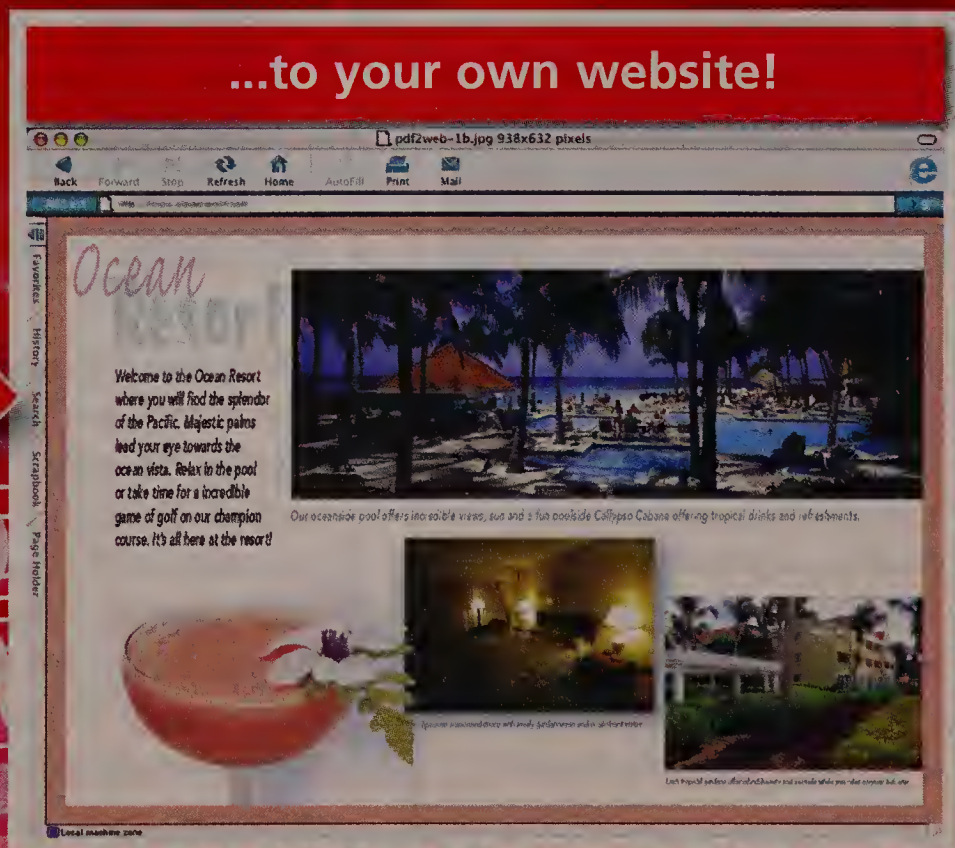
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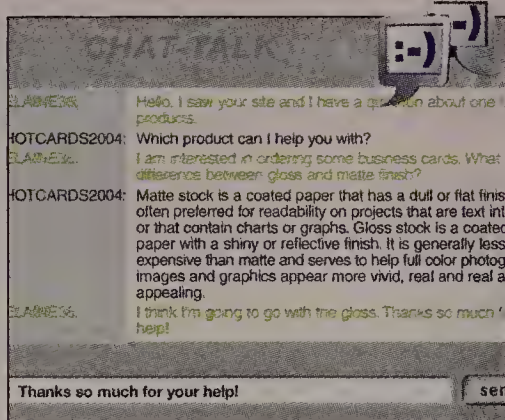
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MARKETING TOOLS

Make your site interactive and increase communication with 1&1.

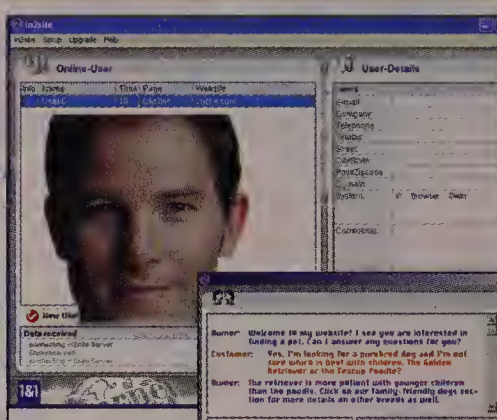
1&1 gives you the tools that let you effectively communicate with your customers and site visitors, keep them intrigued and keep them coming back for more. Your shared hosting package comes complete with high-performance features that let you connect with your visitors through live interaction, feedback forms, e-mail newsletters and more. Best of all, these tools are so easy to use that no programming knowledge is needed!

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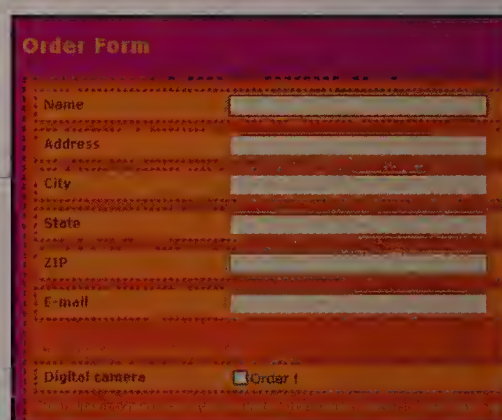
Chat Channels

Provide a meeting place for your customers and add entertainment value to your site. Unlike other chat programs, with Chat Channels your guests won't have to download any software, so they can check in from anywhere. And, your users won't be bombarded with advertisements! What you get is a place to talk to others with no added hassles.



In2site Live Dialogue

Wouldn't it be great if you could talk to your visitors while they are using your website – live and in real time? You can with In2site Live Dialogue from 1&1! In2site Live Dialogue allows for quick and easy communication with your visitors, making it an invaluable tool for sales, support and consulting professionals.



1&1 WebElements

Adding template-driven contact forms, online polls, event registrations and more to your site is a breeze with 1&1 WebElements. Adapt the templates to fit your site or be creative and easily build your own forms for any purpose! The information that your visitors enter is saved in a special Internet database, so you can view the results at any time.

*Chat Channels and 1&1 WebStatistics are included with Home packages

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YOUR LOGO **newsletter**

Let the 1&1 Newsletter Tool help you build and maintain a relationship with your visitors via e-mail newsletters. An ideal way to keep your customers up-to-date about your newest products, exciting finds and upcoming events, e-mail newsletters keep them coming back for more!

How does it work?
To access the Newsletter Tool, simply login to your Control Panel and you're just steps away from communicating with your website visitors more easily than ever before. And since the 1&1 Newsletter Tool is browser-based and launches right from your Control Panel, there's no software to install.

When you're ready to build an e-mail newsletter, editing tools and built-in design templates let you create professional looking e-mails quickly and with no programming knowledge. Then check your completed newsletter in test mode and click send!

We even include tools to build your own mailing list! Simply incorporate a template-driven subscription form on your site so interested visitors can quickly request to receive your e-mail newsletters. Once the form is submitted, the data is automatically entered into a

1&1 Newsletter Tool

E-mail newsletters provide an easy, cost-effective way to build and maintain relationships with your site visitors. The 1&1 Newsletter Tool lets you create and send professional-looking e-mails – with no programming hassles! You'll get everything you need to build your own mailing list, manage recipients' addresses, track results and more.

Membership List

Alan Bishop	634 E. 39th Street, New York, NY 10019	alanb@myhost.com
Stephen Bradshaw	1954 Corgin Street, Hudson, OH 44236	bradshaws@myhost.co
Catherine Leonard	64 Stanhope Drive, Pittsburgh, PA 15237	family@myname.com
Carl Brown	653 Liberty Avenue, Wilmington, NC 28403	brownc2521@lycos.com
Tom Stowe	26 N. Hills Road, Chandler, AZ 85226	webunited@gmx.net
Helen McSweeney	817 Providence Hwy, Boston, MA 02116	helenmcsweeney@hotmail.com

1&1 WebDatabase

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1&1 WebStatistics

Understand visitor dynamics with 1&1 WebStatistics. Gather all of the information you need and generate a detailed analysis of how your website is performing. Display the information in the format you choose – pie charts, bar graphs, or simple numerical output. Use the data to improve navigation and maximize the success of your site!

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— Linux packages



— Microsoft packages

HOME PACKAGE

FROM
\$4⁹⁹
PER MONTH

INCLUDES 1 DOMAIN

PACKAGE FEATURES		
Web space	1,000 MB	1,000 MB
FTP accounts	1	1
Monthly Transfer Volume	25 GB	25 GB
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	1	1
1&1 WebStatistics	✓	✓
SITE-BUILDING TOOLS		
NEW PDF2Web Converter	✓	✓
NEW DynamicSiteCreator	✓	✓
NEW Graphic archive	✓	✓
WebsiteCreator	12 pages	12 pages
Software suite worth \$600	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	—	✓
DOMAIN NAMES		
Included Domains	1	1
Subdomains	10	10
Run multiple independant sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	200	200
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus Protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
Dedicated SSL Certificate	optional	optional
PER MONTH	\$4⁹⁹	\$6⁹⁹

BUSINESS PACKAGE

FROM
\$9⁹⁹
PER MONTH

INCLUDES 3 DOMAINS

PACKAGE FEATURES		
Web space	2,000 MB	2,000 MB
FTP accounts	5	5
Monthly Transfer Volume	50 GB	50 GB
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	5	5
1&1 WebStatistics	✓	✓
In2site Live Dialogue	✓	✓
1&1 Newsletter Tool	✓	✓
1&1 WebElements	✓	✓
SITE-BUILDING TOOLS		
NEW PDF2Web Converter	✓	✓
NEW DynamicSiteCreator	✓	✓
NEW Graphic archive	✓	✓
WebsiteCreator	18 pages	18 pages
Software suite worth \$600	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	—	✓
ASP.NET, .NET Framework	—	✓
Perl, PHP3, PHP4, and PHP5	✓	—
1&1 WebDatabase	✓	✓
Database	1 MySQL	MS Access
Cron Jobs	✓	—
SSI (Server side includes)	✓	✓
DOMAIN NAMES		
Included Domains	3	3
Subdomains	50	50
Run multiple independant sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	500	500
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus Protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
SSH Secure Shell Access	✓	—
Dedicated SSL Certificate	optional	optional
PER MONTH	\$9⁹⁹	\$12⁹⁹

DEVELOPER PACKAGE

FROM
\$19⁹⁹
PER MONTH

INCLUDES 5 DOMAINS

PACKAGE FEATURES		
Web space	4,000 MB	4,000 MB
FTP accounts	25	25
Monthly Transfer Volume	100 GB	100 GB
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	10	10
1&1 WebStatistics	✓	✓
In2site Live Dialogue	✓	✓
1&1 Newsletter Tool	✓	✓
1&1 WebElements	✓	✓
SITE-BUILDING TOOLS		
NEW PDF2Web Converter	✓	✓
NEW DynamicSiteCreator	✓	✓
NEW Graphic archive	✓	✓
WebsiteCreator	25 pages	25 pages
Software suite worth \$600	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	—	✓
ASP.NET, .NET Framework	—	✓
Perl, PHP3, PHP4, and PHP5	✓	—
1&1 WebDatabase	✓	✓
Database	3 MySQL	MS Access, MS SQL
Cron Jobs	✓	—
SSI (Server side includes)	✓	✓
Advanced Developer Tools	✓	—
DOMAIN NAMES		
Included Domains	5	5
Subdomains	200	200
Run multiple independant sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	1,000	1,000
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus Protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
SSH Secure Shell Access	✓	—
Dedicated SSL Certificate	✓	✓
PER MONTH	\$19⁹⁹	\$24⁹⁹

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- Server configured and installed by 1&1
- New innovative interactive tools included

Windows Server: Web Edition

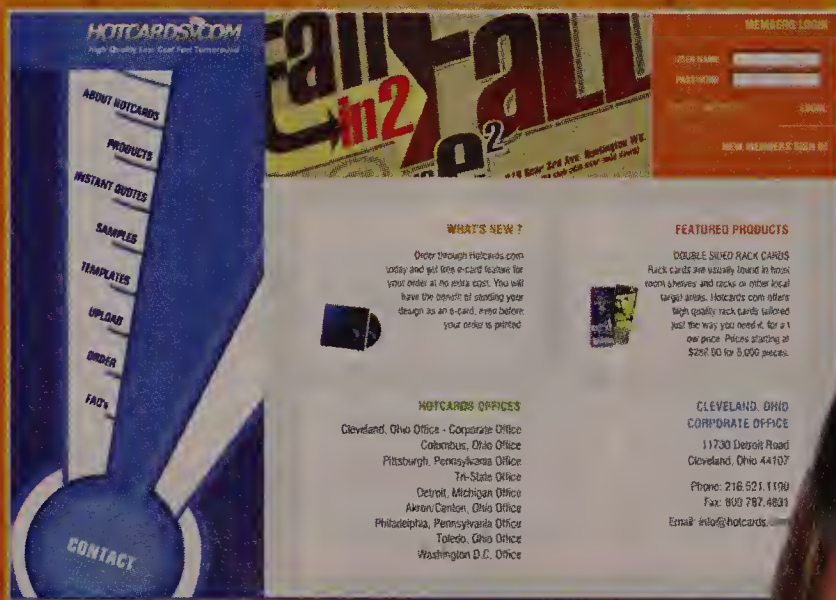
- Included with Server I & II
- Designed for dedicated web serving and hosting
- Remote Desktop Control
- ASP, ASP.NET, MSDE

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- Designed to support sophisticated and demanding applications
- Exchange Server installable
- Includes Active Directory, Streaming Media Server, Terminal Services

Plesk 7 Reloaded Included with All Root Servers

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- Manage web spaces plus up to 100 domains
- Become your own host by partitioning your server into shared web space



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Nikki Woodruff
www.hotcards.com

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**PLESK7
RELOADED**



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For Performance
and Convenience

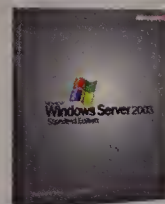
- All the features of shared hosting with the power of a dedicated server
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- 1&1 user-friendly Control Panel for easy administration
- Includes Dedicated SSL Certificate at no extra cost



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For Security and
Reliability

- Windows Server 2003 Standard Edition with Server III (Web Edition with Server I & II)
- Unlimited administration access
- .NET Framework already integrated



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- 256 MB DDR-RAM
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- 500 GB bandwidth included

\$49

PER
MONTH

\$59

PER
MONTH

\$69

PER
MONTH

SERVER II

- Intel Pentium 4, 2.4 GHz
- 512 MB DDR-RAM
- 40 GB IDE hard drive
- 500 GB bandwidth included

\$69

PER
MONTH

\$79

PER
MONTH

\$89

PER
MONTH

SERVER III

- Intel Pentium 4, 3.06 GHz Processor with Hyper-Threading
- 1 GB DDR-RAM
- 120 GB IDE hard drive
- 500 GB bandwidth included

\$99

PER
MONTH

\$109

PER
MONTH

\$129

PER
MONTH

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Jesus F. Moreno
shop.gitanosoftware.net

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30+ professional shop templates

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Secure online payments via PayPal and WorldPay

- No merchant account necessary with PayPal
- Connect with 35,000 loyal PayPal users – with no paperwork or bank application

8 easy-to-use wizards

- Step-by-step guides
- Quickly and simply configure:
 - Shopping basket
 - Order processing
 - Tax clearing
 - Delivery methods
 - Payment settings

SSL secured

- All shop-based settings created in SSL secured pages
- Maximum integrity of confidential data
- Fully protected from third-party access

Easy order processing

- Choice of shipping methods
- Multiple currencies supported
- Tax clearing server included

Dedicated SSL Certificate

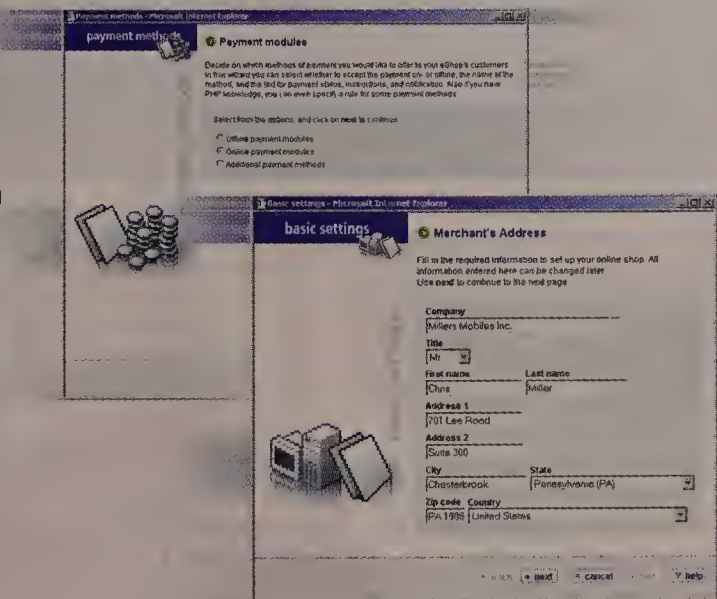
A Dedicated SSL Certificate from 1&1 shows your customers that your site is secure and they can conduct transactions with confidence. The certificate is included with the Developer eShop and can be added to the Business or Professional eShop for just \$49 per year.

Hosting Included

With all 1&1 eShops, no additional hosting package is needed because web space, traffic and even e-mail accounts are all included! Plus, there's no software to install and 1&1 handles all the maintenance and updates so you can focus 100% on your online business.

And more!

- Google Conversion Tracking
- Froogle Product Search
- Customer account administration
- Easy account management for your customers



BUSINESS eSHOP

- 50 MB web space
- 10 GB monthly transfer volume
- 50 item product catalog
- Choice of 2 shipping methods

\$9⁹⁹
PER MONTH

PROFESSIONAL eSHOP

- 300 MB web space
- 30 GB monthly transfer volume
- 200 item product catalog
- Unlimited item variants
- Choice of 5 shipping methods
- Multi-currency support
- Import/export customer data
- Online credit card clearing with PayPal and WorldPay
- Tax clearing server (calculates taxes by state, county and city)

\$29⁹⁹
PER MONTH

DEVELOPER eSHOP

- 1200 MB web space
- 60 GB monthly transfer volume
- Unlimited item product catalog
- Unlimited number and depth of sub-categories
- Unlimited shipping methods
- Multi-currency support
- Import/export customer data
- Online credit card clearing with PayPal and WorldPay
- Tax clearing server (calculates taxes by state, county and city)
- FTP access
- Customer account management
- Fully customizable templates
- Dedicated SSL Certificate included
- In2site Live Dialogue

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And now, 1&1 offers even more features and more space for improved e-mail communications! Mailbox space has been increased to a **massive 1 GB**. 1&1 Instant Mail now supports the IMAP protocol, allowing you access to your mail no matter where you are. Plus, **Spam filtering** and **Virus Protection** are now included.

1&1 INSTANT MAIL

Mail in an instant!

What does your ambiguous e-mail address say about you? Are you ready to take your personal e-mail to a more professional level? Then 1&1 has your solution. Simply sign up for 1&1 Instant Mail and then add on your domain. In just minutes you'll have the power to send and receive e-mail from your own domain name.

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- 10 e-mail aliases
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- Send and receive e-mail from your domain
- Easy setup via the 1&1 Control Panel

Now with
**1 GB
MAILBOX
SPACE**

\$0⁹⁹
PER
MONTH

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- **NEW** 1 GB e-mail storage space
- Group functionality tools
- Outlook® Web Access
- Synchronize your data with ActiveSync
- Virus Scanner installed on the Exchange Server
- Spam filter included in Outlook 2003

*\$6.99 shipping & processing fee applies

**OUTLOOK®
2003
INCLUDED***
with all
Exchange accounts

\$6⁹⁹
PER
MONTH

Includes 24/7 support • No setup fee

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147 **HDTV FOR \$500
TO \$2000**

154 **GADGET FREAK:
AUTOMATED HOME**

154 **NEXT UP:
DELL AXIM X50V**

JVC'S AV-48P575 rear-projection
CRT (below left) and Dell's W1700 LCD.



The new world of personal tech—for the living room and beyond

NEXT GEAR

EDITED BY YARDENA ARAR

HDTV ON THE CHEAP

YOU WANT AN HDTV FOR THE HOLIDAYS—BUT YOU DON'T WANT TO SPEND A FORTUNE GETTING IT? GOOD NEWS: YOU HAVE MORE CHOICES THAN EVER. **BY EDWARD B. DRISCOLL JR.**

THE PRIME TV buying season is now upon us, and if a television is on your shopping list, you should be thinking HDTV. The federally mandated transition to an all-digital broadcast system is getting closer all the time (the target is the end of 2006); and if you have to get a DTV-ready set anyway, why not go for one

that's capable of displaying the beautiful, high-resolution images of high-definition?

MONEY NO OBSTACLE

IF YOU'VE BEEN holding off because you preferred not to spend the thousands that the first high-definition sets cost (and that the sexiest plasma and LCD models now com-

mand), it's time to take another look at products and price tags: Today you can find HD sets for as little as \$500. Here are some strategies for saving on your HDTV purchase, as well as a selection of products in the \$500-to-\$2000 range.

The first thing to consider is whether you need a true HD set—one with a built-in high-

definition tuner—or whether an HD-ready set will suffice (see "Learn the HD Lingo," page 148). HD-ready sets can cost a few hundred dollars less than comparable true HDTV sets, and they make sense if you'll be using an HD cable or satellite box and consequently don't need a built-in tuner to obtain over-the-air HD. ►

The next big decision is over screen technology. In the sub-\$2000 price range, you'll most likely be choosing from direct-view CRTs (the type of set that most people own now), rear-projection CRTs, and smaller LCDs. You're unlikely to find too many worthwhile plasmas or newer DLP rear-projection sets in these price ranges.

To make this decision, you'll have to balance three key variables: overall size of the set, including depth (LCDs are the thinnest); screen size (rear-projection CRTs deliver the largest); and image quality (direct-view CRTs still rule).

Inch for inch, CRTs are the most affordable, and LCDs are the most expensive. So to keep your costs down, if you want a skinny LCD, you'll have to set-

DISPLAYS

BUDGET HDTV TECH FACE-OFF

HERE ARE THE PRINCIPAL screen technologies you're likely to encounter for \$2000 or less.

HD TECHNOLOGY	Screen size	Price range	Pros	Cons
Direct-view CRT	13 to 36 inches	\$700-\$1400	Proven technology, handsome images	Bad fit for tight spaces
LCD	13 to 30 inches	\$750-\$2000	Thin, lightweight, wall-hangable	High price for screen size; limited viewing angle
Rear-projection CRT	40 to 65 inches	\$1200-\$2000	Best screen-size-to-price ratio	Heavy and bulky; best viewed in dim light

tle for a much smaller display. On the other hand, if you want to watch TV with a crowd, be aware that direct-view CRTs provide the crispest images from all viewing angles.

Another decision that you should try to make early on is whether to go with a traditional 4:3 aspect ratio or with the

newer 16:9 wide-screen format. Although most HDTVs have a screen ratio of 16:9 (which is closer than 4:3 to the format of most feature films), some cheaper HDTV-ready 4:3 screens can show a letterboxed 16:9 image. You might even prefer watching this way, especially when you consider

that the majority of commercially broadcast content is formatted for 4:3 screens. Make sure that you look at both types of screen before you buy.

Whatever technology and format you decide to go with, you can save some money by choosing a slightly older set rather than the latest model (but confirm that the set can display true 1080i and 720p high-def resolutions, and not just the lower-res 480p content on most DVDs). Another way to get a markdown is to look for floor samples or scratch-and-dent sales—if the TV will sit in a media cabinet, those nicks won't show anyway.

Think about shopping online, especially if you've settled on a lightweight flat-panel set that won't cost you a fortune in shipping. Check out discount warehouse chains like Costco and Sam's Club, too. Prices will be cheap, but—as usual with discount providers that emphasize low cost over customer service and knowledgeable sales reps—you have to know your models going in.

To see what's available in affordable HD, we looked for several representative products that fall into three price ranges: \$500 to \$999, \$1000 to \$1499, and \$1500 to \$2000. Here's what we found.

GLOSSARY

LEARN THE HD LINGO

WHEN SHOPPING for TVs, you are likely to encounter a number of similar-sounding terms that are hard to keep straight. Let's look at three key ones.

HDTV: This term technically refers to a set with an internal tuner that complies with new digital-TV standards made by the Advanced Television Systems Committee (ATSC), and to a screen that can display the high-definition formats of 720p (720 lines of progressive-scan video) and 1080i (1080 lines of interlaced video).

Some newer HDTV sets also accept CableCards, which allow you to plug a digital HD cable directly into the set (but you'll still need a set-top box if you want to get video on demand or other interactive features).

HDTV-ready or HDTV monitor:

This describes a display that can accept signals from an HD source and display pictures at HD resolutions, but that lacks an internal ATSC tuner. (It may have an NTSC tuner, the kind found in TVs for the last half-century.) This isn't necessarily a problem: For \$300 or more, you can buy an external ATSC tuner to bring in over-the-air HD programs; and if you plan to get your HD programming via satellite or cable, your service will sell or rent you a box that will handle HD decoding (though you could opt for the CableCard, mentioned above). In fact, if you have to purchase a cable or satellite set-top box anyway, you might as well save a few hundred dollars by getting an HD-ready set.



EDTV: Particularly when you are shopping for a flat-screen digital TV, be wary of the term *enhanced definition* (ED or EDTV for short). It denotes a screen that can display only non-HD resolutions of up to 480p—about 852 by 480 pixels. That's the format used by today's DVD movies, and it's clearer than analog; but while these sets might be featured in a store's HD section and may be capable of processing an HD signal, they will downscale HD images to the lower-resolution screen format they use, so you won't end up with the quality of true HD.



PHILIPS'S 30PW8402/37 CRT TV.

\$500 TO \$999

NOT MANY sub-\$1000 LCD TVs can display true HDTV, but the number is growing as new players such as Syntax (maker of Olevia brand sets), Westinghouse Digital, and Zenith, and traditional PC powerhouses like Dell and HP, enter the market.

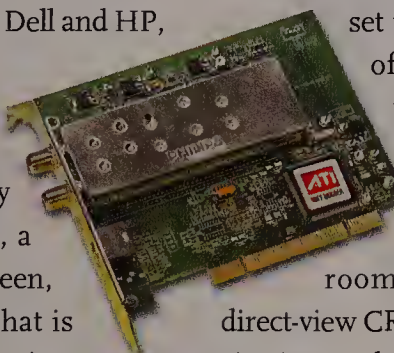
If you want to watch HDTV in a small space, try the Dell W1700, a 17-inch, wide-screen, HD-ready LCD that is capable of producing a 1080i picture and a 720p picture, for a street price of about \$700. The W1700's Faroudja line-doubling interlacing technology produced a smooth-looking image that garnered high marks from our reviewer

(find.pcworld.com/44672).

If space isn't an issue, look at a model such as the **Philips 30PW8402/37**, an attractive 30-inch direct-view CRT suitable for a bedroom or any other spot that can accommodate a set that has a depth of 22 inches. The unit's bright and clear picture will look just fine in a well-lit room. And like any direct-view CRT, it has a wider viewing angle than an LCD.

If even \$500 is a stretch—and you own a PC with decent graphics and a good monitor—consider an HDTV tuner card such as the **ATI HDTV Wonder** (pictured above). You'll need to have a graphics card with 64MB or more of video memory and Microsoft DirectX 9 support. The ATI card's scaler will adjust the picture to fit both 16:9 and 4:3 monitors in a range of screen resolutions.

As an extra feature, the card can record HDTV programs to a PC's hard drive à la TiVo or ReplayTV (but you'll need 8.6GB of space per hour for HD recorded at best quality).



ATI HDTV Wonder

PC video card, \$200
find.pcworld.com/44670

Dell W1700

17-inch LCD, \$700
find.pcworld.com/38546

Philips 30PW8402/37

30-inch direct-view CRT, \$799
find.pcworld.com/44668

\$1000 TO \$1499

MOVING UP IN the LCD category, we checked out the 27-inch **Syntax Olevia LT27HV**, a \$1299 HD-ready TV set from a new but aggressive company in the HDTV arena. Though it lacks such niceties as a Cable-Card slot, an HDMI input, or

bulky, heavy set—a larger rear-projection CRT, such as the 48-inch **JVC AV-48P575**. Images on RP-CRTs are far superior to those you may remember from years past: The technology controlling their color guns is much better now.



SYNTAX'S Olevia LT27HV LCD TV.

simulated surround sound, this wide-screen set produced reasonably bright and crisp images, and it covers all the basics, including a PC input and picture-in-picture.

For larger spaces, your options include a conventional direct-view CRT such as the 34-inch, wide-screen **Toshiba 34HF84** HDTV-ready set, or—if you don't object to having a

JVC AV-48P575

48-inch rear-projection CRT, \$1300
find.pcworld.com/44944

Syntax Olevia LT27HV

27-inch LCD, \$1299
find.pcworld.com/44684

Toshiba 34HF84

34-inch direct-view CRT, \$1400
find.pcworld.com/44676

\$1500 TO \$2000

WITHIN THE highest price range, you'll be looking at screens measuring around 34 to 40 inches for direct-view CRT and up to 56 inches for rear-projection CRT. You can also find respectable 26- to 30-inch flat-panel sets.

The **Sony KV-34HS420**, part of Sony's higher-priced Trinitron line, is a handsome, 34-inch, wide-screen, direct-view,

HD-ready CRT with a variety of fancy extras you won't see in cheaper CRTs of similar size. Among its features is the ability to freeze a frame of video, handy for people who want to jot down phone numbers or take a closer look at sports scores; it can also scale a 480i image (which is what today's NTSC analog broadcasts deliver) at sizes up to ►

1080i, creating an enhanced, pseudo-HD image from a non-HD channel.

Meanwhile, on the rear-projection side, the 56-inch **JVC AV-56P575** shows how much HD-ready set you can get for under \$2000. If you have space for a cabinet 24 inches deep by 48

inches wide, a rear-projection set like this one gets you the biggest screen for the buck.

To get a sense of the offerings at the other end of the spectrum, we looked at **Dell's W2600**, a 26-inch HD-ready LCD TV that makes a good HDTV and can double as a PC monitor. For optimum HDTV viewing, set up the W2600 in a room that's slightly darkened; if you must view it in bright light, you'll find that



SONY'S KV-34HS420 CRT TV.

tweaking the set's brightness a little can improve things.

The W2600 has high-end features missing in the less expensive (but slightly larger) Syntax Olevia—for example, presets that adjust brightness and color balance for different content. And what's more, the Dell looks great at all settings.

Even bigger HD-ready LCD models are cropping up at prices below \$2000. You can expect LCD prices to continue

their rapid descent (see "Price Check" on page 32) as manufacturers open more production facilities to build LCDs for both computer monitors and televisions.

Whichever set you select, you can make your HDTV viewing more enjoyable by following a few steps

the minute you get it home. First, make certain that your seating is at an appropriate distance from the screen (see "HDTV Screen Size," below). Second, take time to optimize the picture: Most sets ship with controls that produce the most vivid picture possible, in order to make them stand out on a showroom floor. Dialing down the sharpness and perhaps the contrast or brightness, too, will help you avoid

getting an image that appears artificially intense or pixelated.

Our bottom line: If it's time to buy a new TV, it's probably time to make it an HDTV. You'll discover a wealth of sets that deliver the glory of HD without inflicting severe sticker shock.

Edward B. Driscoll Jr. is a Silicon Valley-based freelance journalist who writes regularly on a wide variety of topics.

Dell W2600

26-inch LCD, \$1999
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Sony KV-34HS420

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DISPLAY

HDTV SCREEN SIZE: HOW BIG IS BIG ENOUGH?

IT'S EASY TO FALL into a bigger-is-better mentality when you're trying to choose a television, but the right size for your set depends on how far away from the display you'll be sitting.

Because HDTV is much sharper than old-fashioned TV broadcasts, you can sit closer to an HDTV and not see a blocky, blotchy mess, as you would if you were watching a standard TV. In fact, sitting a bit closer to an HDTV with surround sound can give you a wonderful home theater experience.

On the other hand, sitting too close can be like sitting in the front row of a theater, so in a small room you'll be better served by a smaller screen—especially for non-HD programming.

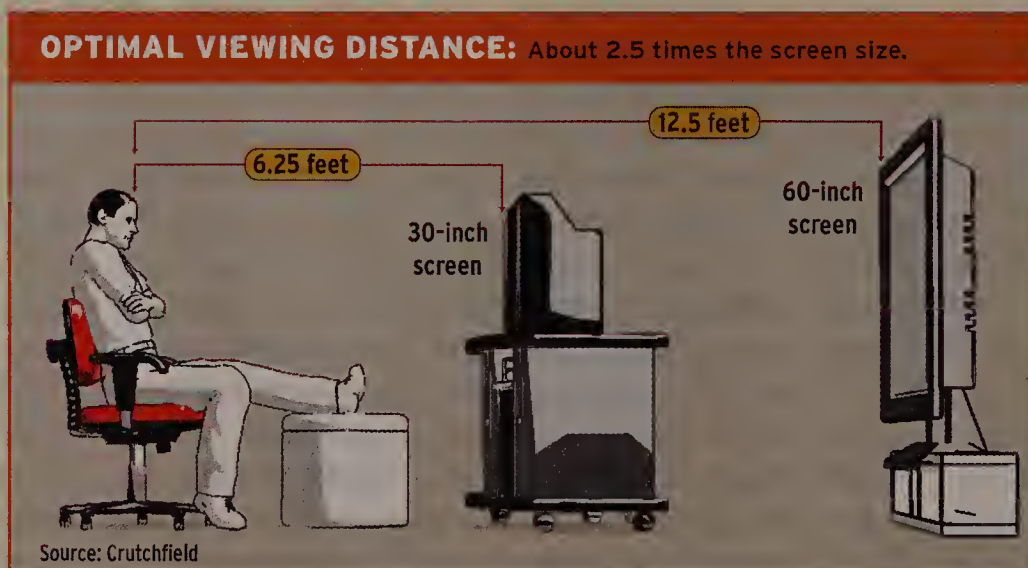
If you're likely to sit about 6 feet from the set, the mail-order

electronics distributor Crutchfield suggests a 30-inch screen. But if you're watching only HD content, you can go with a larger set. A 60-inch HDTV can look good from 8 feet to as far as 15 feet away.

Remember that flat-panel or rear-projection sets look better from directly in front (or nearly that), so you might want to move your seating back if more than one or two people will be watching.

Is there a point at which a TV is too small to bother with HDTV?

Die-hards would say no, but we think that with anything under 15 inches, trying to distinguish between HDTV and a crisp, high-quality digital cable or satellite picture is tough. You probably won't use a screen that small as a primary set—and few HD sets are that small anyway.



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GADGET FREAK

DAN TYNAN

YOUR HOMELAND SECURITY



IN THE FUTURE our houses will be smarter than we are. Using the Internet and wireless technologies, we'll control our homes' lights and heating, keep an eye on our pets, and scare the hell out of unsuspecting houseguests without ever leaving our desks.

I got a taste of what's coming thanks to the Shell HomeGenie (www.shellhomegenie.com), a toaster-size gizmo that uses its own 2.4-GHz RF network and your broadband connection to automate your home. My verdict? The future looks cool, and a little creepy.

SHELL GAMES

I STARTED BY inserting the included Shell tutorial CD, in which a young man talked me

through the setup process. He had the calm, reassuring tone of a munitions expert telling you how to disarm a bomb.

Two hours later I'd disabled my existing Wi-Fi network (a must for installing the HomeGenie) and connected the HomeGenie gateway to an RF transmitter, my cable modem, and my PC. Then I tried setting up the wireless devices. Shell's \$600 starter kit has a wireless transceiver to control lights or appliances; a motion-sensitive camera; a three-prong plug; and a contact sensor that tells you when a door opens or closes. For \$35 to \$200 you can add sensors that detect water levels, temperature, or motion, and one that controls your thermostat.

But nothing worked. So I called Shell's crack support team, which figured out I had a problem with my RF transmitter and solved it by pushing new drivers to my gateway over the Net. Then I reconnected my Wi-Fi setup.

After that, I was able to control devices and assign schedules to them with a few clicks on the HomeGenie Web site. I trained the camera on the kittens' food dish and captured grainy footage of them tussling over the last morsel of Friskies Fancy Feast. I set up a schedule that switched our living-room lamp on and off at 5-minute intervals, just to make my wife nuts, and I set the sensor to e-mail me whenever the front door moved.

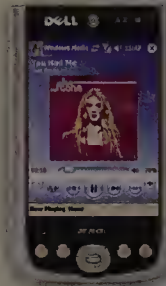
Then I called my wife. "You just opened the front door," I said. "That's creepy," she said. "Are you trying to drive me crazy?" Well, yeah. Isn't that what husbands are for?

But we saw an immediate practical application: to keep an eye on my ailing father-in-law so that my mother-in-law could leave the house without worrying about him wandering off. She could get a text message on her cell phone whenever he tried to step outside, and could then call a neighbor to look in on him. Or I could rig a motion sensor to crank the stereo full blast whenever our senile and in-

NEXT UP

Video on the Go

DELL'S \$499 Axim X50v is a high-end multimedia player in PDA clothing, promising great gaming and video playback as well as productivity tools. The unit is one of the first Pocket PC devices to run Windows Media Player 10 for Mobile, which includes the digital rights management required for the playback of content from subscription services such as CinemaNow and Musicmatch. It has a video-friendly, roomy (3.7-inch) VGA display; Intel's fastest handheld CPU yet (a 624-MHz PXA270); and—a rarity for PDAs—a dedicated graphics chip with 16MB of memory. It also has Wi-Fi and Bluetooth, plus 128MB of ROM and 64MB of RAM. find.pcworld.com/44728



continent dog tried to leave her mark on the carpet.

At \$1000 or more to outfit a typical home, and \$20 per month for the Web service, the HomeGenie is not exactly an impulse purchase. But it's still cheaper than most home security gear, and it's one of the few products that give you everything you need in one box. (If you want to control the thermostat, professional installation is required.)

And the next time you sneak to the fridge for the last piece of pecan pie, you'd better think twice. You never know who might be watching. ■

Contributing Editor Dan Tynan never eats the last piece of pie.

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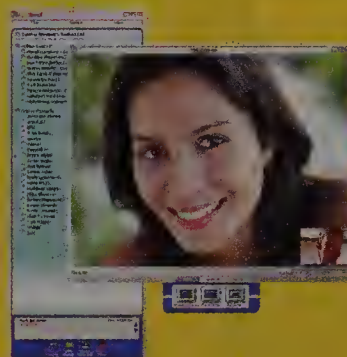
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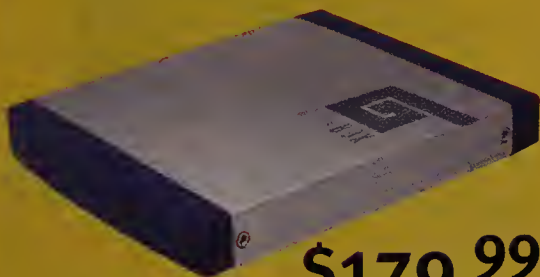
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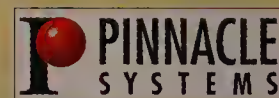
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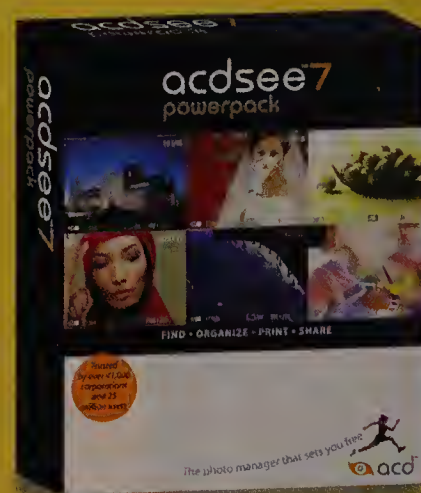
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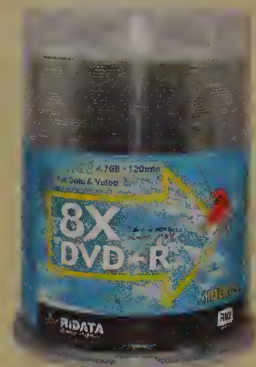
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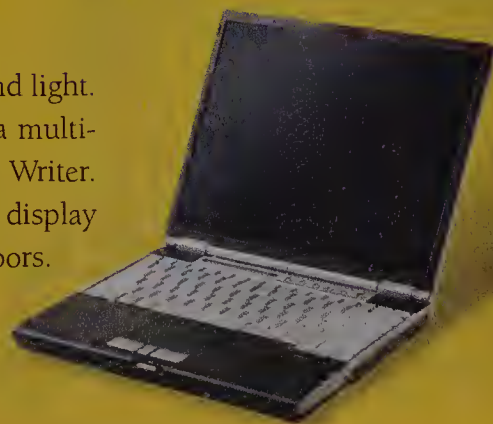
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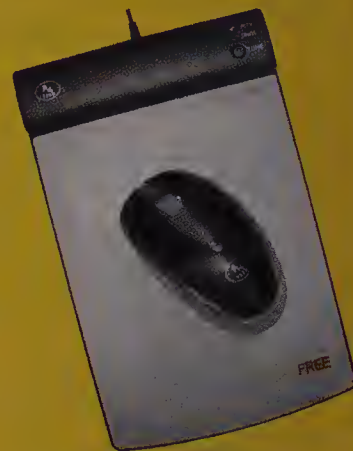
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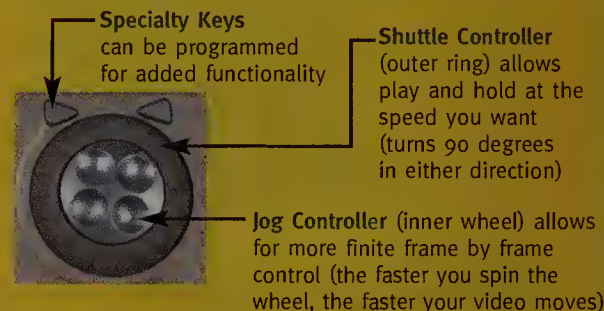
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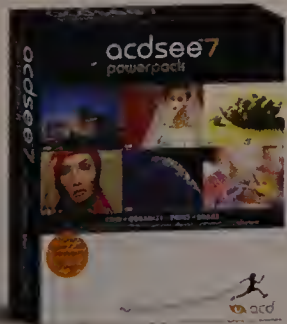
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Lab-tested rankings of the best in PCs,
peripherals, and upgrade components

TOP 100

EDITED BY THE REVIEWS STAFF

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- 166 ADVANCED DIGITAL CAMERAS
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**Spot
LIGHT** Both the Canon EOS 20D (left), a digital SLR, and the Olympus C-8080 Wide Zoom, an advanced point-and-shoot, include lots of controls.



SPOTLIGHT: ADVANCED DIGITAL CAMERAS

Powerful Cameras for Serious Shooters

If **photography means more** to you than family mug shots and vacation snaps, a new digital camera is a significant investment—not only in dollars, but in the time required to find the model that best matches your photographic talents and needs. Fortunately, with the recent arrival of consumer digital SLRs and fixed-lens advanced cameras with 8-megapixel resolutions, 10X zoom lenses, and loads of professional controls, your choices have never been better.

We tested three new models this month: one fixed-lens camera from Canon, the PowerShot G6; and two digital single-lens reflex units, or SLRs, the Canon EOS 20D and the Nikon D70. All three newcomers deliver excellent images and offer a wealth of creative controls for experienced photographers, but they satisfy very different needs. We also got an early taste of two new 8-megapixel Nikon cameras: the Coolpix 8400 and the Coolpix 8800. Even though it's still ►



Top 10 PDAs

Top 10 CHART

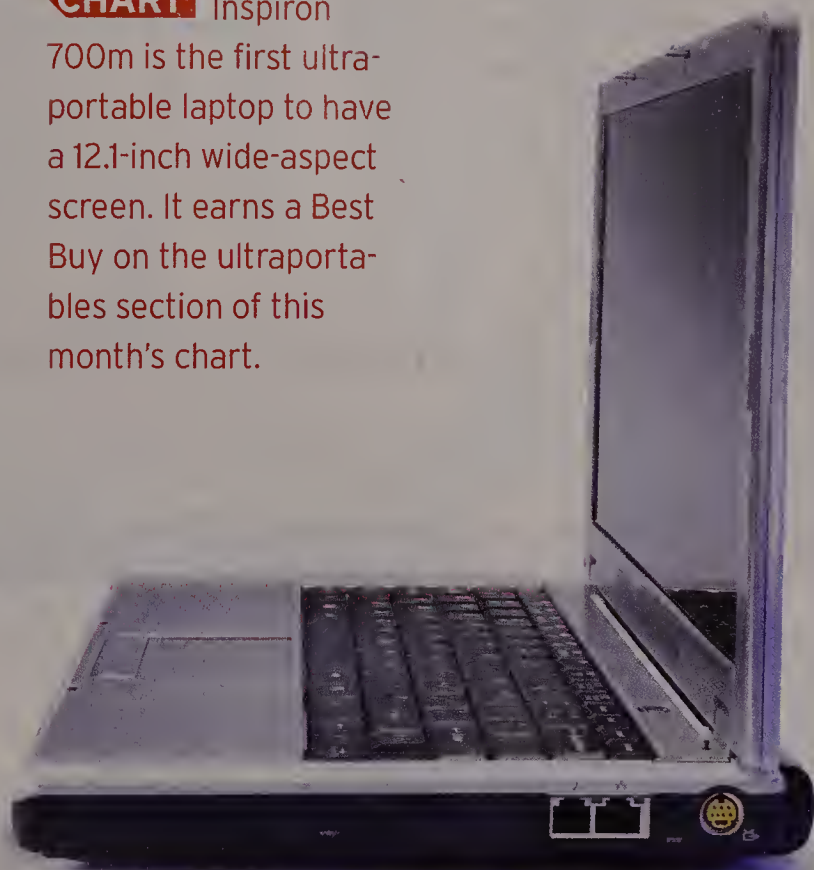
The Asus MyPal A730 (left) has a built-in 1.3-megapixel camera, while the Garmin IQue 3200 has built-in GPS and can be mounted inside your vehicle.

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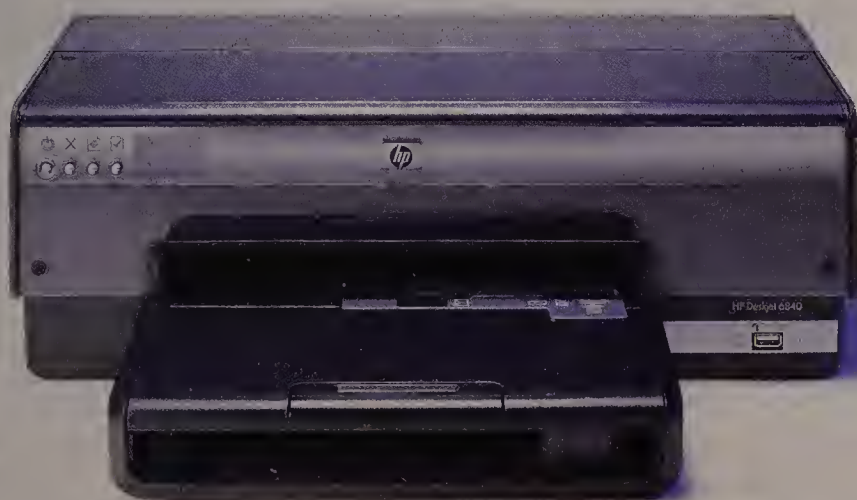
Top 15 Notebooks

Top 10 CHART

The Dell Inspiron 700m is the first ultraportable laptop to have a 12.1-inch wide-aspect screen. It earns a Best Buy on the ultraportables section of this month's chart.



172



Top 10 Printers

Top 10 CHART

HP's Deskjet 6840 includes a built-in 802.11g wireless print server. That alluring feature makes the inkjet pricey, though, so it didn't make the chart.

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INSIDE THE TOP 100

See find.pcworld.com/15720 for details on how we compile charts for the Top 100. Freelance writer Carla Thornton and PC World editors Richard Baguley, Laura Blackwell, Eric Butterfield, Tracey Capen,

Kalpna Ettenson, Rebecca Freed, Melissa J. Perenson, Dan Sommer, and Alan Stafford contributed to the Top 100 section this month. Ulrike Diehlmann, Julio Gianobile, Elliott Kirschling, Jeff Kuta, Tony

K. Leung, Thomas Luong, and William Wang of the PC World Test Center performed testing on the products reviewed in this section, with logistical support provided by Julian Weatherby.

too early to rate the preproduction units for the chart, we offer a preview in "New Twins From Nikon," on page 167.

CHART-WORTHY CAMERAS

OF THE THREE new cameras we formally tested, Canon's PowerShot G6 earned top honors for overall value. The latest upgrade in a long line of G-series models, this incarnation has a similar look and feel to that of its immediate predecessor, the G5, but it keeps pace with the latest

improvements in camera resolution and speed. It has 7.1-megapixel resolution—2 megapixels higher than the G5. Its combination of well-placed controls, intuitive yet powerful settings, and a comfortable grip make it a pleasure to use.

The G6 earned top scores in our lab-based image-quality tests. (For our formal testing, we operate and score all cameras in their full-automatic mode. We follow up with informal shots, in which we freely manipulate the settings to optimize

the quality of each camera's images.)

Though fairly bulky, the G6 is not as massive as our number two Best Buy, the Olympus C-8080 Wide Zoom. Priced approximately \$200 higher than the G6, the C-8080 is a slight step up in photographic horsepower. Its zoom range is a little longer (starting at 28mm, versus the G6's 35mm), and its resolution is 1 megapixel higher. The two cameras are near equals in image-quality scoring, features, and ease of use. Each would be best for ►

TOP 100

TEST Center

Cameras for Serious Shooters

OUR NEW BEST BUY, the Canon PowerShot G6, gives you lots of advanced features such as aperture-priority and shutter-priority settings. If you want the ultimate in camera control, though, consider an SLR like Canon's EOS 20D or Nikon's D70.

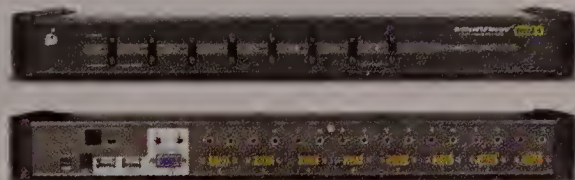
	ADVANCED CAMERA	Price and features	Media, video, and battery type	Performance	Comments
1	Best Buy Canon PowerShot G6 ★★★★★ find.pcworld.com/44872 NEW	• \$699 • 7.1 megapixels • 35mm to 140mm zoom • 21.7 ounces	• 32MB CompactFlash • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Outstanding Ease of use: Outstanding Battery life: Outstanding	Successor to the G5, the G6 ups the resolution by 2 megapixels and returns to Canon's signature silver body. The G6 earned top image-quality scores and has an improved viewfinder.
2	Best Buy Olympus C-8080 Wide Zoom ★★★★★ June 04 find.pcworld.com/41860	• \$900 • 8 megapixels • 28mm to 140mm zoom • 25.6 ounces	• 32MB XD-Picture Card, plus CompactFlash slot • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Outstanding Ease of use: Very Good Battery life: Outstanding	Olympus's top-of-the-line fixed-lens camera, the C-8080 has a surprisingly short zoom range for its price, but it earned the second-best image-quality scores and has extensive and intuitive controls.
3	Canon EOS 20D ★★★★★ find.pcworld.com/44874 NEW	• \$1500 (body only) • 8.2 megapixels • Interchangeable lenses • 26.7 ounces	• CompactFlash slot (media not included) • No video or audio recording • One rechargeable lithium ion	Image quality: Very Good Ease of use: Very Good Battery life: Outstanding	An upgrade of the venerable 10D, this "prosumer" SLR is a bit lighter than its predecessor and increases the resolution by 2 megapixels; it also has improved autofocus and a faster burst mode.
4	Olympus C-5060 Wide Zoom ★★★★★ Feb 04 find.pcworld.com/39527	• \$599 • 5.1 megapixels • 27mm to 110mm zoom • 17.9 ounces	• 32MB XD-Picture Card, plus CompactFlash slot • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Very Good Ease of use: Very Good Battery life: Outstanding	Light and compact for an advanced camera, the C-5060 has multiple, intuitive exposure controls; and its wide-angle lens is especially expansive. Its LCD rotates up and swivels for self-portraits.
5	Canon PowerShot Pro1 ★★★★★ Sept 04 find.pcworld.com/43164	• \$900 • 8 megapixels • 28mm to 200mm zoom • 22.9 ounces	• 64MB CompactFlash • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Outstanding Ease of use: Good Battery life: Very Good	This pricey model has an SLR-like feel. A barrel ring controls both zoom and manual focus, and the PowerShot Pro1 has a broad selection of controls. The quality of its images was outstanding.
6	Nikon D70 ★★★★★ find.pcworld.com/44876 NEW	• \$1000 (body only) • 6.1 megapixels • Interchangeable lenses • 23.7 ounces	• CompactFlash slot (media not included) • No video or audio recording • One rechargeable lithium ion	Image quality: Fair Ease of use: Good Battery life: Outstanding	Images taken with Nikon's consumer SLR in full-automatic mode did not impress us; but with adjustments, the camera can take fine shots. The \$1300 kit with a 3.8X zoom lens is a great deal.
7	Nikon Coolpix 8700 ★★★★★ June 04 find.pcworld.com/41862	• \$999 • 8 megapixels • 35mm to 280mm zoom • 18.7 ounces	• CompactFlash slot (media not included) • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Very Good Ease of use: Fair Battery life: Good	The Coolpix 8700 is surprisingly compact for a camera with 8X optical zoom, and it creates fine photos, but the complicated menu system can make setting controls daunting.
8	Olympus C-770 Ultra Zoom ★★★★★ Sept 04 find.pcworld.com/43174	• \$600 • 4 megapixels • 38mm to 380mm zoom • 11.9 ounces	• 16MB XD-Picture Card • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Very Good Ease of use: Good Battery life: Fair	The C-770 Ultra Zoom is light and fairly compact, and it includes a slew of creative controls, though switching among them can take time. The camera comes with 10X optical zoom.
9	Casio Exilim Pro EX-P600 ★★★★★ Sept 04 find.pcworld.com/42832	• \$599 • 6 megapixels • 33mm to 132mm zoom • 9.1 ounces	• 9MB internal memory, plus SD Card slot • 320 by 240 video with audio • One rechargeable lithium ion	Image quality: Fair Ease of use: Very Good Battery life: Very Good	A 2-inch LCD with a unique status display, plus a generous 25 scene modes with built-in help, highlight the Exilim Pro EX-P600. It has its own 9M8 internal memory and accepts SD Cards.
10	Sony Cyber-shot DSC-F828 ★★★★★ Apr 04 find.pcworld.com/40802	• \$1000 • 8 megapixels • 28mm to 200mm zoom • 33.9 ounces	• Memory Stick and CompactFlash slots (media not included) • 640 by 480 video with audio • One rechargeable lithium ion	Image quality: Good Ease of use: Very Good Battery life: Outstanding	The first of the new 8-megapixel camera class, Sony's DSC-F828 did not fare as well as its 8-megapixel competitors in our image-quality tests. A long lens barrel gives it an SLR-like feel.

CHART NOTES: Street prices are as of 10/6/04. Resolutions are expressed in effective pixels; focal range is identified as 35mm equivalent; camera weights include batteries. See find.pcworld.com/10860 for details on PC World's Star Ratings. Visit find.pcworld.com/44928 for reviews of all products tested this month and ranked in this chart. **HOW WE TEST:** We take a series of shots, with and without flash, at the camera's highest resolution and at its default automatic settings. We photograph a complex still life and a mannequin to see how well each camera captures details and subtle colorings. A panel of judges reviews the on-screen and printed photos and assigns image-quality scores; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

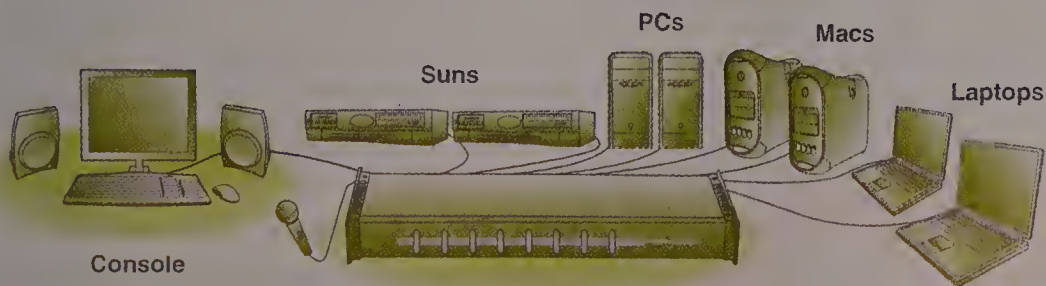


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New Thinking, New Style

photographers who want to steer clear of the cost and weight of an SLR camera and its many attendant lenses.

This month we took a second look at one of the two true consumer digital SLRs currently available. Unhappy with the quality of the images that an early-production Nikon D70 captured for us, we ordered and tested another one. Though we got better results this time around, the D70 is not a camera we learned to love. It clearly has a more rugged body, but its menu system feels cluttered (though better than those of previous Nikons). And the D70 is missing some features, such as a way to store combinations of camera settings.

For the legions of people who already own Nikon lenses, the D70's \$1000 price is a great deal. But for others, the better bet is to purchase the \$1300 kit, which includes the body and a 27mm-to-105mm (35mm equivalent) zoom lens.

Canon's EOS 20D is \$1500 for the body only and \$1600 for a kit with a starter lens. An upgrade of the popular 10D, this chunky SLR features an 8.2-megapixel



CANON'S POWERSHOT G6 combines top-notch image quality with great ease of use.

sensor (the 10D was 6.3 megapixels) and faster burst mode and automatic focus. The 20D's nine-point autofocus system is fast and precise, and a diamond-shaped array of lights in the viewfinder makes composing shots with the desired focus very easy. It also has a nice black-and-white mode with simulated color filters to give you the same sort of effects and quality as shooting with monochrome film.

In our image-quality tests, neither SLR performed as well as our top-rated, fixed-

lens models. In full-automatic mode, both SLRs (but especially the Nikon D70) tended to underexpose and undersaturate images. The conventional wisdom, at least from the manufacturers, is that SLR users should expect to put more effort into editing images on your PC, where you can more easily reveal details in shadows; this might come as a surprise to people buying their first digital camera.

In our informal image testing, we got attractive results when we turned each camera's mode dial to the manual zone. Bracketing was the most valuable tool for getting fine shots with these two SLRs. Both models let you bracket your exposure and your white balance—frequently the two most critical controls.

Both SLRs also have one distinct advantage: They can power up and fire off a shot almost instantaneously. If you frequently shoot fast action, an SLR is truly the ideal tool. For more on the differences between SLR and advanced fixed-lens models, see "When an SLR Is Not the Best Choice" on page 168. ▶

PREVIEW

New Twins From Nikon

NIKON GAVE US A preview of two new 8-megapixel cameras, the Coolpix 8400 and Coolpix 8800. We didn't receive production units in time for full testing; by the time you read this, however, production models should be available, priced at \$900 and \$1000, respectively.

The two have much in common. Their rugged, black bodies have electronic eye-level viewfinders with diopters to adjust for your eyesight, bright 1.8-inch LCD monitors that fold out and rotate, and a hot shoe for connecting an optional flash gun. The 8400 has a 3.5X zoom lens that starts at 24mm (35mm equivalent)—great for wide-angle shots. The 8800's massive lens barrel houses a 10X zoom that starts at 35mm and includes built-in vibration reduction.

These cameras' controls are generally laid out well, although we kept turning them off when we meant to zoom. A rocker by your right thumb lets you zoom smoothly and precisely.

Unlike previous Nikon models, the 8400 and 8800 have proper mode dials. You can quickly and clearly select full-automatic shoot-



THE NIKON COOLPIX 8400 (left) and the Nikon Coolpix 8800.

ing or the usual manual or semiautomatic setting. We loved being able to apply two banks of user settings to the manual modes, and we quickly programmed the Func button to switch between them.

In our informal testing, both Nikons showed bright and accurate colors, sharp focus, and a lot of contrast. We found the 8400 easier to carry; the 8800, however, excelled at a car race we attended, allowing us to get close-up shots of the drivers and cars. We're looking forward to seeing how the production units do in our lab tests.

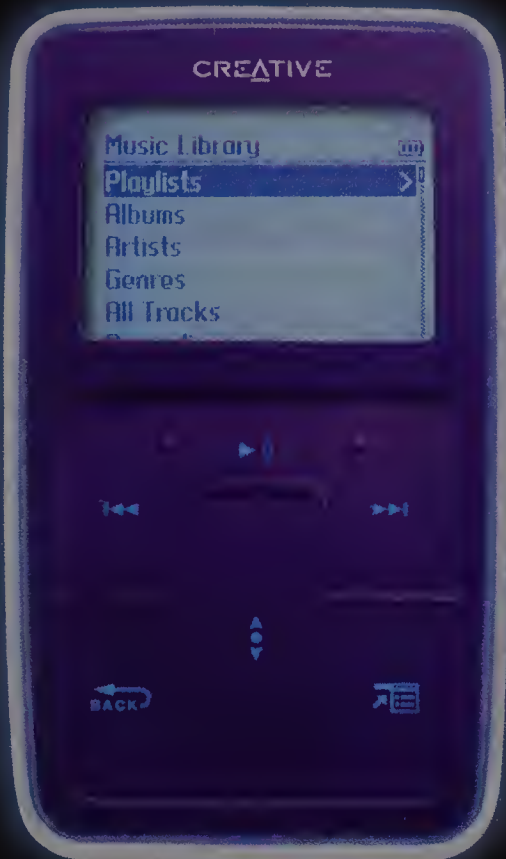
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During long exposures at higher ISO levels, such as when you're shooting in low light, your images commonly incur a lot of random graininess (noise). Our two SLRs were much better than previous digital SLRs (and the fixed-lens models) at dealing with this, but we could see some noise in the images when we looked closely. We took shots in various low-light conditions, and when we used Adobe Photoshop to zoom in on the Canon 20D's darkest shots, we could see colored dots in areas of shadow, while the Nikon D70's noise tended to be more monochromatic and easier to edit out.

HAVE IT YOUR WAY

ADVANCED CAMERAS ARE becoming increasingly customizable. Nearly all of them let you adjust sharpness and contrast in the camera (as many point-and-shoots now do), but several of the models on the chart, such as some units from Canon and Olympus, also have programmable but-



NIKON'S D70, a digital SLR, takes a little getting used to, but has lots of flexibility.

tons or modes that let you quickly recall your favorite exposure selections for specific shooting conditions. With the Olympus C-8080 you can select from eight My Mode settings, and you can set the custom button on the top of the camera to assist in switching between them.

The Canon PowerShot G6 takes it one step further by adding two customizable shooting modes to the selection dial. You

might set one bank to help with portraits when you're shooting in aperture-priority mode, by turning on the spot-focus, single-shot, and flash options. You might set the other bank to capture moving objects, such as action at a sporting event. The main drawback: The camera does not let you label each bank of settings. Neither of the two new SLRs has a way to save multiple personalized settings, though each does provide

settings for fine-tuning your exposures.

Nearly all advanced cameras support uncompressed RAW image formats. (Of those in our chart, only the Casio Exilim Pro EX-P600 and the Olympus C-770 Ultra Zoom do not.) Compressed JPEG files always lose some image data, though the difference between a minimally compressed JPEG and a RAW file is subtle. But cameras differ in how they process an image, and RAW files enable you to control image processing on your PC.

—Paul Jasper

REALITY CHECK

When an SLR Is Not the Best Choice

WITH THE PRICE of digital SLRs dropping as low as \$1000, the toughest decision an experienced digital photographer may have to make these days relates to format: fixed-lens or single-lens reflex (SLR). Most people who have devoted a good part of their life and income to photography prefer to use an SLR. But many of the very features that make an SLR a pleasure to use are also liabilities.

Cost is an obvious drawback. Digital SLRs still cost far more than their fixed-lens counterparts—two to three times as much, once you add in the cost of various lenses.

And while that wealth of interchangeable lenses is one of an SLR's all-too-obvious charms, the heavy body and lenses can add up to a considerable amount of bulk and weight. On the other hand, many advanced fixed-lens models, such as the Canon PowerShot G6, have lighter and more compact accessory lenses—typically a wide-angle and a telephoto—that will cover the majority of shooting needs. And though the accessory lenses are not as fast or as accurate as SLR lenses, they do a pretty good job. Think about a five-day backpacking trip where the choice is between more food or more camera; the prospect of lug-

ging an SLR and all of its lenses becomes distinctly less appealing.

The LCD monitor on an SLR camera exists only for reviewing your shots and operating the menus. Usually that's fine, because the optical viewfinder on an SLR always works better for composing shots than a fixed-lens camera's viewfinder (whether optical or electronic). In one instance, however, the LCD viewfinder of a fixed-

lens camera is an advantage: Models such as the Olympus C-8080, which have fold-out LCDs, let you hold the camera above your head or down on the ground and still accurately compose your shots.

Unlike nearly all fixed-lens cameras (both simple point-and-shoots and advanced models), SLRs cannot record video clips. When you trip the shutter on an SLR, its mirror swings up, momentarily blocking the viewfinder. In theory, an SLR could record video, but you wouldn't have a viewfinder while recording.

If you want to shoot short video sequences occasionally, a fixed-lens model may be the way to go. Frame rates and resolutions are improving all the time, and media cards are increasing in capacity. But if you're serious about video, you're better off with a camcorder.

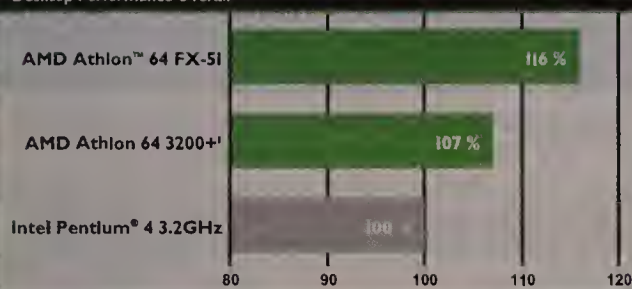
SLRs STILL COST FAR MORE THAN THEIR FIXED-LENS COUNTERPARTS.

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TOP 15 DESKTOP PCs

POWER SYSTEM		Overall rating	Street price (9/8/04)	WorldBench 5 performance score ¹ Faster	Comments
1	Best Buy Dell Dimension 8400 find.pcworld.com/43544	88	Average \$2999 ⁵	Windows XP Home Very Good 98	This PC's new Intel processor and chip set, top-performing graphics card, and attractive LCD are a winning combo. (★★★★★ Oct 04)
2	Polywell Poly 939VF-FX53 find.pcworld.com/43988	84	Average \$2999	Windows XP Professional Very Good 105	This fast system offers high graphics and audio quality, though for the price you might expect better than a 19-inch CRT. (★★★★☆ Nov 04)
3	HP Media Center PC M1050y find.pcworld.com/43984	84	Very Expensive \$5100	Windows XP Media Center Edition Good 96	Handles most multimedia tasks, from TV to radio to video. Extensive features—including a huge LCD—justify the price. (★★★★★ Nov 04)
4	Micro Express MicroFlex 36A find.pcworld.com/44198	83	Inexpensive \$2499	Windows XP Home Very Good 101	Fast, affordable, and very expandable. Frame rates in our video game tests were good, but well below those of competitors. (★★★★☆)
5	Xi Computer MTower 64FX find.pcworld.com/43534	83	Expensive \$3570	Windows XP Home Very Good 103	Swift system comes with a great selection of software, room for expansion, and wireless support. (★★★★☆ Oct 04)
6	ABS Awesome 6500 find.pcworld.com/43992	82	Average \$3199	Windows XP Home Good 96	ABS's first system with Intel's new 925 chip set has good speed, a stylish retro look, and numerous features for a fair price. (★★★★☆ Nov 04)
7	Compaq GX5000Z find.pcworld.com/44206	82	Very Expensive \$5429	Windows XP Professional Very Good 97	Luxury-class price includes a \$2200 wide-screen, HDTV-ready display. Frame rates in our video game tests were exceptional. (★★★★☆)
VALUE SYSTEM		Overall rating	Street price (9/8/04)	WorldBench 5 performance score ¹ Faster	Comments
1	Best Buy Dell Dimension 4700 find.pcworld.com/43542	86	Average \$1299 ⁹	Windows XP Home Very Good 83	This update of a previous Best Buy uses a new Intel chip set to provide better integrated graphics and sound. (★★★★☆ Oct 04)
2	ABS Awesome 4300 find.pcworld.com/43990	85	Expensive \$1789	Windows XP Home Outstanding 95	Impressive performance and extensive features justify the high price; the quality of the CRT was disappointing, though. (★★★★☆ Nov 04)
3	Polywell Mini-Box 900VX-3000 find.pcworld.com/43540	84	Average \$1275	Windows XP Home Outstanding 93	Small system offers good performance and plenty of ports, but it has extremely limited expansion options. (★★★★☆ Oct 04)
4	Micro Express MicroFlex 3200 Plus find.pcworld.com/44014	84	Average \$1499	Windows XP Home Outstanding 96	Ties for fastest on the value list, and produced high frame rates on games; it could use a better monitor, however. (★★★★☆ Sept 04)
5	CyberPower Gamer Infinity 8000 Dream find.pcworld.com/43980	82	Expensive \$1685	Windows XP Home Very Good 91	Value-priced gaming system delivers great graphics and solid performance, as well as stylish looks. (★★★★☆ Nov 04)
6	IBuyPower Gamer EX find.pcworld.com/43546	81	Average \$1395	Windows XP Home Very Good 92	Subpar sound and strictly average performance mean gamers should look elsewhere. (★★★★☆ Oct 04)
7	Sys Technology Sys Performance 3700+/64 find.pcworld.com/43978	79	Expensive \$1674	Windows XP Home Outstanding 96	Plain-looking case, but impressive performance. A variety of software is included; speakers are lackluster, though. (★★★★☆ Nov 04)
8	Alienware Bot find.pcworld.com/44204	77	Expensive \$1583	Windows XP Home Very Good 83	Conservative-looking for an Alienware box, this SOHO system is quick enough for office duties; the LCD's display looked great. (★★★★☆)

Go to find.pcworld.com/10860 for details on PC World's Star Ratings.

Go to find.pcworld.com/39209 for details about the weightings we give to the various factors that contribute to a desktop PC's overall rating in each of the two categories.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See find.pcworld.com/15720 for more details.

² Total capacity in gigabytes (may represent multiple drives).

³ Vertical cases are towers (over 20 inches), midsize towers (15.5 to 20 inches), or mini-towers (under 15.5 inches). Compacts are small-footprint or thin horizontal cases.

THOUGH THE NEW MICROFLEX 36A from Micro Express was a hair faster in our WorldBench 5 tests than the top-ranked Dell Dimension 8400, and \$500 cheaper, the Dimension earned higher scores for graphics performance, sound quality, and LCD image quality—enough of a difference to make the Dell our Best Buy for the third month in a row. The MicroFlex comes in at number four on the power side of the chart.

Compaq's Athlon 64-based GX5000Z gaming system is a far cry from

HP's usual gray boxes. This polished-aluminum tower is stylish without being garish like many gaming systems. It's also fast and nicely configured, with a high-end, 23-inch wide-screen display that makes up over a third of the system's total \$5429 price. But if you can afford it, the LCD is definitely worth considering. Combined with the Compaq's quick Nvidia GeForce 6800 Ultra graphics

Visit find.pcworld.com/44856 for reviews of all products tested this month and ranked in this chart.

CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
3.6-GHz Pentium 4 560	1024/DDR2-533 SDRAM	320 (RAID)	19-inch LCD	256M8 ATI Radeon X800 XT	Midsize tower	12X DVD+RW and 48X CD-RW drives	Gigabit network adapter, Dell 5650 speakers, Microsoft Works Suite 2004	Outstanding	Good	Good/Fair
2.4-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	148 (RAID)	19-inch CRT	256M8 EVGA GeForce 6800 Ultra	Midsize tower	8X DVD±RW drive and 16X DVD-ROM/52X CD-RW combo drive	Media-card reader, ⁶ gigabit network adapter, Creative T7700 7.1 speakers, Wi-Fi antenna, wireless LAN card, wireless keyboard, no modem	Outstanding	Very Good	7/7
3.6-GHz Pentium 4 560	1024/DDR400 SDRAM	410 ⁸	23-inch LCD	256M8 ATI Radeon X600 Pro	Midsize tower	12X DVD+RW and 16X DVD-ROM drives	Media-card reader, ⁶ Klipsch ProMedia Ultra 5.1 speakers, Microsoft Office SBE 2003, 160GB removable hard drive, remote control	Outstanding	Good	Fair/Fair
3.6-GHz Pentium 4 560	1024/DDR2-533 SDRAM	500 (RAID)	19-inch LCD	256M8 ATI Radeon X600 XT	Midsize tower	8X DVD±RW drive	Media-card reader, ⁶ Logitech Z5300 speakers, no modem	Very Good	Good	7/7
2.4-GHz Athlon 64 3800+	1024/DDR400 SDRAM	148 (RAID)	19-inch LCD	256M8 Asus V9980 Ultra	Midsize tower	12X DVD±RW and 16X DVD-ROM drives	Gigabit network adapter, 802.11g wireless adapter, Logitech X-620 6.1 speakers, Corel WordPerfect 11 Productivity Pack, no modem	Very Good	Good	7/7
3.4-GHz Pentium 4 Extreme Ed.	1024/DDR2-533 SDRAM	160 (RAID)	19-inch CRT	256M8 EVGA GeForce 6800 Ultra	Midsize tower	12X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁶ gigabit network adapter, Logitech Z680 speakers, Microsoft Works Suite 2004, no modem	Very Good	Very Good	Good/7
2.4-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	148 (RAID)	23-inch LCD	256M8 NVidia GeForce 6800 Ultra	Tower	8X DVD+R/RW and 16X DVD-ROM drives	Media-card reader, ⁶ 10/100 and gigabit network adapters, speakers built into LCD monitor, no modem	Outstanding	Fair	Fair/Poor
CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
3-GHz Pentium 4 530	512/DDR2-400 SDRAM	160	17-inch LCD	Integrated Intel 915G using main memory	Minitor	16X DVD-ROM and 48X CD-RW drives	Dell ADA-425 speakers, Microsoft Works 2004	Good	Good	Good/Fair
2-GHz Athlon 64 3200+	1024/DDR400 SDRAM	200	19-inch CRT	256M8 ATI Radeon 9800 Pro	Midsize tower	12X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁶ gigabit network adapter, Logitech Z-640 5.1 speakers, Microsoft Works Suite 2004	Very Good	Good	Good/7
2-GHz Athlon 64 3000+	512/DDR400 SDRAM	160 (RAID)	19-inch CRT	128M8 ChainTech SA5900X	Compact	12X DVD±RW drive	Media-card reader, ⁶ Aopen MS805-B speakers, no modem	Outstanding	Good	7/7
2-GHz Athlon 64 3200+	512/DDR400 SDRAM	250	17-inch LCD	128M8 ATI Radeon 9800 Pro	Midsize tower	8X DVD±RW drive	Media-card reader, ⁶ gigabit network adapter, Creative Labs SBS 4.1 450 speakers, no modem	Very Good	Good	7/7
3.6-GHz Pentium 4 560	512/DDR400 SDRAM	160	17-inch LCD	128M8 NVidia GeForce PCX 5750	Tower	8X DVD±RW and 16X DVD-ROM drives	Media-card reader, ⁶ gigabit network adapter, Creative Labs 5.1 560 speakers, Microsoft Works 7	Outstanding	Good	7/7
3.2-GHz Pentium 4 540	1024/DDR400 SDRAM	120	19-inch CRT	128M8 NVidia EVGA GeForce PCX 5750	Midsize tower	12X DVD±RW and 16X DVD-ROM drives	Gigabit network adapter, PMP0 3.1 speakers	Very Good	Fair	7/7
2.4-GHz Athlon 64 3700+	512/DDR400 SDRAM	80	19-inch CRT	128M8 PNY Verto 5900 SE	Midsize tower	16X DVD-ROM/48X CD-RW combo drive	Media-card reader, ⁶ gigabit network adapter, Altec Lansing 251 speakers, Corel WordPerfect, Ulead PhotoImpact, Quicken 2003	Very Good	Good	7/7
3-GHz Pentium 4 530	512/DDR400 SDRAM	120	17-inch LCD	Integrated Intel 915G using main memory	Minitor	12X DVD±RW drive	Media-card reader, ⁶ Logitech Z-640 speakers, no modem	Very Good	Good	7/7

⁴ Unless otherwise stated, systems come with a modem and a 10/100 network adapter.

⁵ Use Dell Value Code 6V411-840REV to get this price.

⁶ Includes support for some combination of CompactFlash I/II, Memory Stick, Memory Stick Pro, MultiMediaCard, Secure Digital Card, SmartMedia, and XD-Picture Card.

⁷ Insufficient data to give a rating.

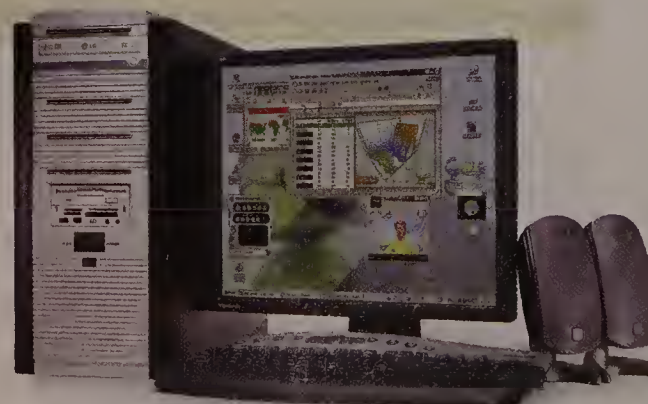
⁸ Includes 160GB removable hard drive.

⁹ Use Dell Value Code 6V411-470REV to get this price.

card—which helped deliver some of the highest frame rates we've seen from a PC in our video game tests—the monitor takes gaming to a new level. Two knocks: The price does not include external speakers (though the built-in speakers on the LCD sounded surprisingly good), and we'd like to see more than the 148GB of space on the PC's two RAID hard drives.

The one new model earning a spot on

the value portion of the chart is tailored for business use. Surprisingly, it comes from Alienware—a company known for its gaming PCs and big, extraterrestrial-themed cases. A slender black minitor with a professional look, Alienware's Bot has a conveniently small size that should fit any desk, but this compactness also limits its expandability (the configuration we tested had no open bays).



THE COMPAQ GX5000Z lives up to its gaming billing, with high frame rates and a huge LCD.

TOP 15 NOTEBOOK PCs

DESKTOP REPLACEMENT		Overall rating	Street price (9/20/04)	WorldBench 5 performance score ¹	Faster	Comments
1	Best Buy HP Compaq Business Notebook Nc6000 find.pcworld.com/41093	82	Average \$1874	Windows XP Professional	Good 74	Lightweight corporate notebook comes with dual wireless capabilities and great battery life. (★★★★☆ May 04)
2	Gateway M405CS find.pcworld.com/42184	81	Very Inexpensive \$1223	Windows XP Home	Good 69	Model performs well and is low-priced. Order it with the lithium ion battery (as we did) to get the battery life we saw in our tests. (★★★★☆ July 04)
3	Gateway M520XL find.pcworld.com/44256	79	Inexpensive \$1650	Windows XP Professional	Very Good 77	The M520XL combines strong performance with a six-in-one card reader, for an inexpensive price. Limited in expansion options. (★★★★☆)
4	Dell Inspiron 8600 find.pcworld.com/44058	79	Very Expensive \$2680	Windows XP Professional	Outstanding 90	Convenient design touches and good sound make up for this laptop's thick case. (★★★★☆ Nov 04)
5	Sys Technology WideView find.pcworld.com/44258	78	Inexpensive \$1595	Windows XP Professional	Outstanding 93	Though not elegant in design, the WideView, with an Athlon 64 3400+ processor, offers great performance for the money. (★★★★☆)
ALL-PURPOSE NOTEBOOK		Overall rating	Street price (9/20/04)	WorldBench 5 performance score ¹	Faster	Comments
1	Best Buy IBM ThinkPad R51 find.pcworld.com/43118	82	Inexpensive \$1699	Windows XP Professional	Good 67	The slim R51 suits users who care more about mainstream features than bells and whistles. Excellent keyboard. (★★★★☆ Sept 04)
2	IBM ThinkPad T42 find.pcworld.com/43080	80	Expensive \$2299	Windows XP Professional	Very Good 83	IBM pays terrific attention to detail in this impressive business portable, which has good speed and an outstanding keyboard. (★★★★☆ Sept 04)
3	Toshiba Satellite A55-S326 find.pcworld.com/44064	80	Inexpensive \$1599	Windows XP Home	Good 73	Easy-to-use audio controls and a firm keyboard highlight this inexpensive, midweight notebook. (★★★★☆ Nov 04)
4	Gateway M320XL find.pcworld.com/44254	80	Average \$1800	Windows XP Professional	Very Good 76	Lightweight but loaded with an 80GB hard drive, the stylish M320XL would make an uncomplicated road machine for people with lots of big files. (★★★★☆)
5	Toshiba Tecra M2V-S310 find.pcworld.com/42558	79	Inexpensive \$1499	Windows XP Professional	Fair 61	Lightweight business notebook offers good battery life and generous storage expansion. At this price, model includes 256MB of RAM. (★★★★☆ Aug 04)
ULTRAPORTABLE		Overall rating	Street price (9/20/04)	WorldBench 5 performance score ¹	Faster	Comments
1	Best Buy Dell Inspiron 700m find.pcworld.com/44246	78	Average \$2091	Windows XP Home	Very Good 80	This strongly built, lightweight laptop offers a wide-aspect screen. Marring the package is a slightly cramped keyboard. (★★★★☆)
2	Dell Latitude X300 find.pcworld.com/44250	77	Expensive \$2425 ²	Windows XP Professional	Good 73	The relatively fast Latitude X300 is nicely expandable thanks to Dell's MediaBase, the best docking station we've seen in this class. (★★★★☆)
3	Fujitsu LifeBook P7010D find.pcworld.com/44260	77	Average \$2149	Windows XP Professional	Fair 58	Light unit with fingerprint reader lasts ages on a battery charge, and shoe-horns in extra card slots, a combo drive, and a good keyboard. (★★★★☆)
4	IBM ThinkPad X40 find.pcworld.com/43066	76	Average \$1824 ²	Windows XP Professional	Fair 55	Ultraportable ThinkPad boasts the finest keyboard for its size. Optical drive is USB- or dock-based. (★★★★☆ Sept 04)
5	Toshiba Portégé M205-S810 find.pcworld.com/43120	75	Expensive \$2299	Windows XP Tablet Edition	Good 64	This stylish convertible tablet/notebook handles both jobs adequately. It has good battery life and is very responsive to screen taps. (★★★★☆ Sept 04)

Go to find.pcworld.com/10860 for details on PC World's Star Ratings. Go to find.pcworld.com/40049 for a breakdown of the weightings we give to the various factors that contribute to a notebook's overall rating in each of the three categories.

¹ See "Your Guide to the Top 100" at find.pcworld.com/15720 for more details.

² Except where noted, all Intel CPUs are SpeedStep chips, which run at a slower speed on battery power. (We performance-test all notebooks plugged in.)

³ Features listings are not exhaustive.

⁴ Unless otherwise noted, all notebooks come with a lithium ion battery.

⁵ Includes computer, AC adapter, power cord, optical drive, and floppy drive (if offered).

SIX NOTEBOOKS BREAK INTO THE TOP 15 chart this month. The Dell Inspiron 700m leads its group and earns a Best Buy award. Highlighting the laptop is a wide-aspect screen whose extra width and denser native resolution of 1280 by 800 pixels let you see more of your work.

Second among ultraportables is the Dell Latitude X300, which we

tested with Dell's extra-cost MediaBase, the nicest docking station in this class. The X300 also has a great touchpad-equipped keyboard. If you dream of a portable that lasts a very long time on one battery charge and is small and light enough to pick up with just one hand,

Visit find.pcworld.com/44618 for reviews of all products tested this month and ranked in this chart.

	CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
	1.6-GHz Pentium M 725	14.1	512	60	Touchpad, eraserhead	One multipurpose bay with DVD-RDM and CD-RW combo drive	802.11a/g, Bluetooth, gigabit ethernet, SD Card slot, embedded security chip	Very Good	Outstanding/ 6:23	Light/ 6.6	Fair/Fair
	1.5-GHz Pentium M 715	15.0	512	40	Touchpad	Fixed DVD-RDM and CD-RW combo drive	802.11g, Microsoft Works 7	Good	Very Good/ 5:15	Average/ 7.1	Good/Good
	3.06-GHz Mobile Pentium 4 532	15.4	512	80	Touchpad	Fixed DVD±RW drive	802.11g, six-in-one media card reader, Microsoft Works 7	Good	Limited/ 1:42	Heavy/ 9.4	Good/Good
	2-GHz Pentium M 755	15.4	1024	60	Touchpad	One multipurpose bay with DVD+RW drive	802.11g, Corel WordPerfect Productivity Pack	Very Good	Very Good/ 4:32	Average/ 8.3	Good/Fair
	2.2-GHz Athlon 64 3400+ desktop	15.4	1024	60	Touchpad	One multipurpose bay with DVD±RW drive	802.11g, three-in-one media card reader, Corel WordPerfect Productivity Pack	Fair	Fair/ 2:18	Heavy/ 10.4	6/6
	CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
	1.5-GHz Pentium M 715	15.0	512	40	Touchpad, eraserhead	One multipurpose bay with DVD-RDM and CD-RW combo drive	802.11g, gigabit ethernet	Outstanding	Good/ 3:54	Average/ 7.4	Good/Good
	1.7-GHz Pentium M 735	15.1	512	40	Touchpad, eraserhead	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11g, gigabit ethernet	Very Good	Good/ 4:09	Light/ 6.9	Good/Good
	1.6-GHz Pentium M 725	15.0	512	60	Touchpad	Fixed DVD±RW/-RAM drive	802.11g	Good	Very Good/ 4:47	Light/ 6.8	Good/Fair
	1.7-GHz Pentium M 735	15.0	512	80	Touchpad	Fixed DVD±RW drive	802.11g, four-in-one media card reader, Microsoft Works 7	Good	Fair/ 2:25	Light/ 6.5	Good/Good
	1.5-GHz Pentium M	14.1	256	40	Touchpad	One multipurpose bay with DVD-RDM and CD-RW combo drive	802.11g, SD Card slot	Good	Good/ 4:02	Light/ 5.7	Good/Fair
	CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
	1.8-GHz Pentium M 745	12.1	512	60	Touchpad	One multipurpose bay with DVD+RW drive	802.11g, SD Card slot, Corel WordPerfect Productivity Pack	Good	Fair/ 2:45	Very Light/ 4.8	Good/Fair
	1.4-GHz Pentium M LV 738	12.1	640	40	Touchpad	External DVD+RW drive	802.11g, SD Card slot	Very Good	Fair/ 2:31	Very Light/ 4.0	Good/Fair
	1.1-GHz Pentium M ULV 713	10.6	512	60	Touchpad	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11a/g, four-in-one media card reader, fingerprint scanner, Microsoft Works 7	Very Good	Very Good/ 5:15	Very Light/ 4.1	Good/6
	1.2-GHz Pentium M LV	12.1	512	40	Eraserhead	One multipurpose bay with DVD-RDM and CD-RW combo drive ⁸	802.11g, Bluetooth, gigabit ethernet, SD Card slot	Good	Fair/ 2:36	Light/ 5.6	Good/Good
	1.5-GHz Pentium M	12.1	512	60	Touchpad	External DVD-RDM and CD-RW combo drive	802.11g, Bluetooth, SD Card slot	Fair	Good/ 3:20	Average/ 7.1	Good/Fair

⁶ Insufficient data to give a rating.

⁷ Price includes the extra-cost docking station.

⁸ Multipurpose bay is in docking station.

take a look at Fujitsu's LifeBook P7010D.

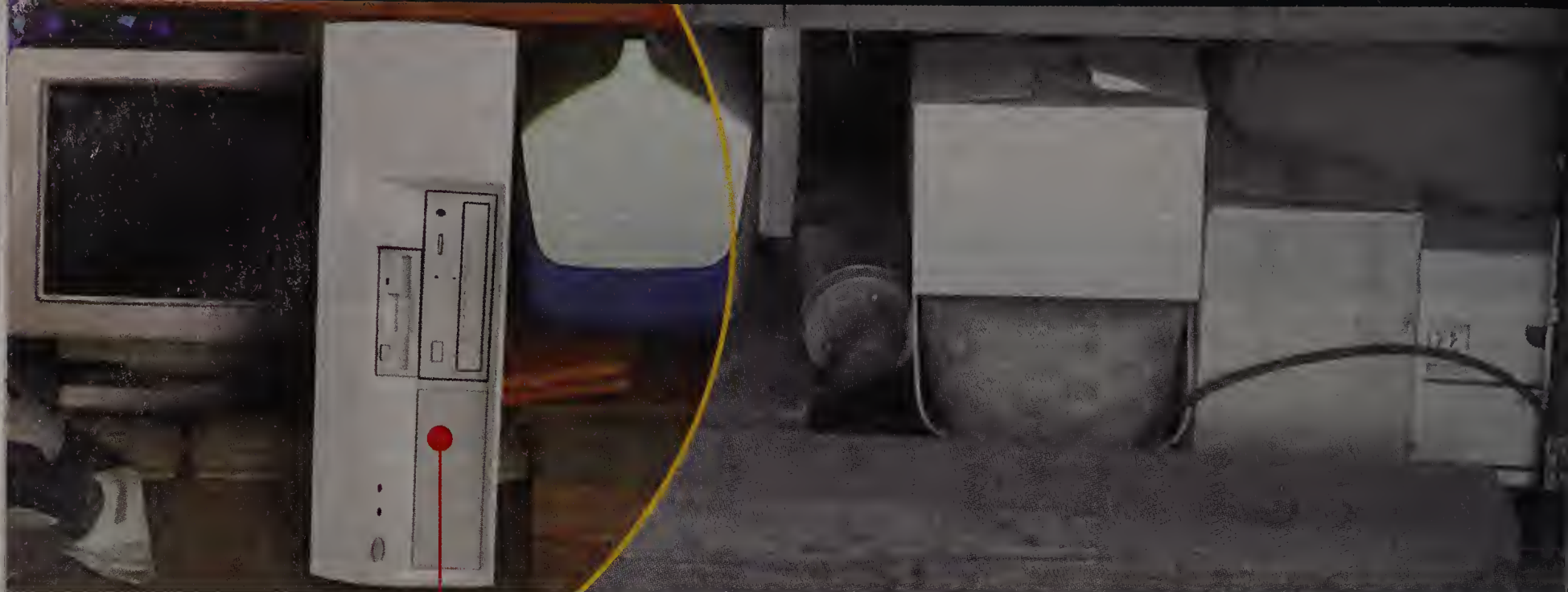
You'll make out like a bandit with the Gateway M520XL's juicy feature bundle, but don't expect much in the way of expansion options. Sys Technology's WideView offers outstanding performance for just \$1595. However, it omits

standard features such as built-in Wi-Fi.

The sleek and stylish Gateway M320XL performed very well, and you'll love its excellent manual. Narrowly missing the chart was the Averatec AV6200H60, a stand-alone, wide-screen DVD player and competent, very inexpensive laptop. ■

LIGHTWEIGHT and long-lasting: Fujitsu's LifeBook.





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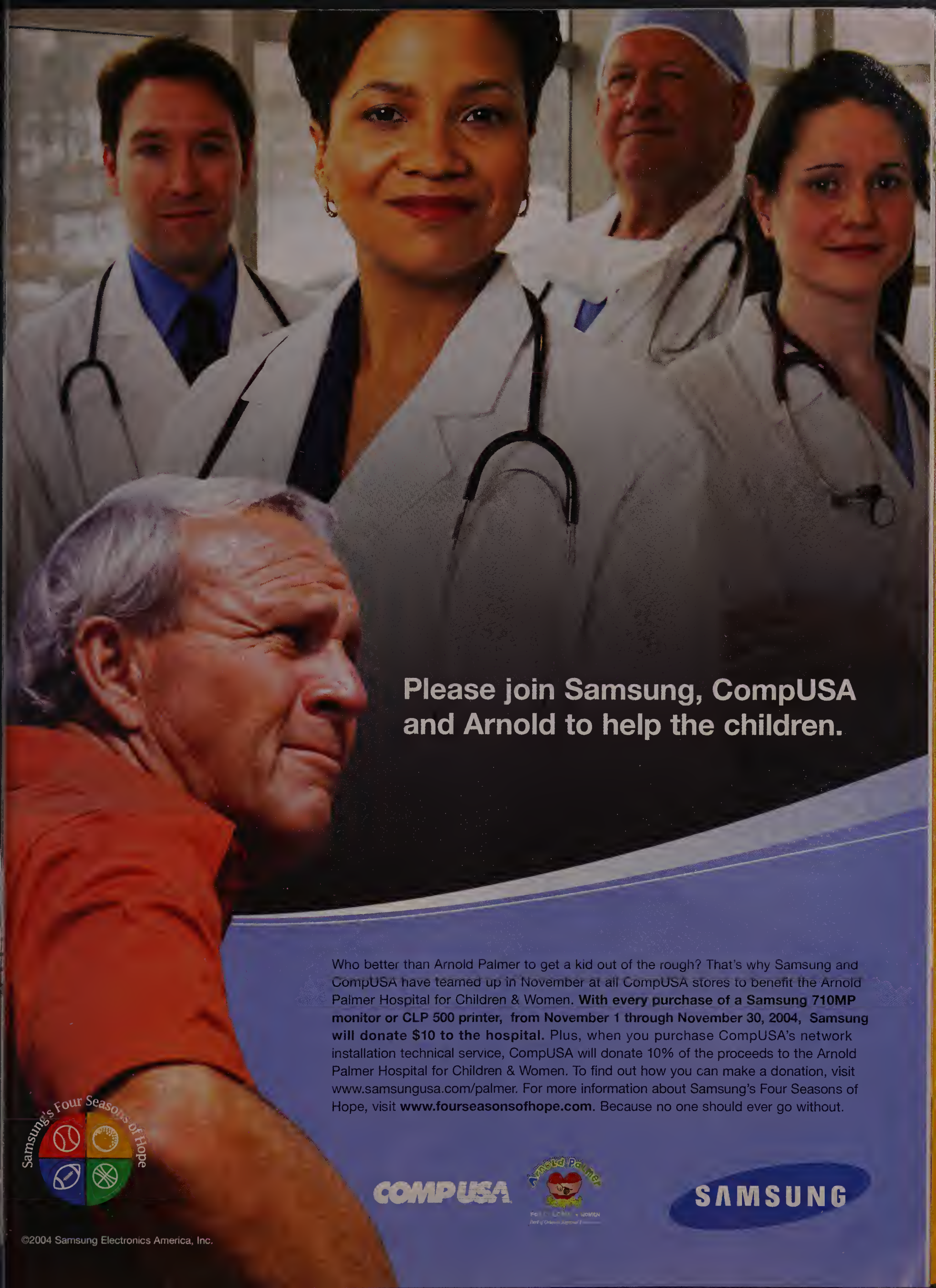
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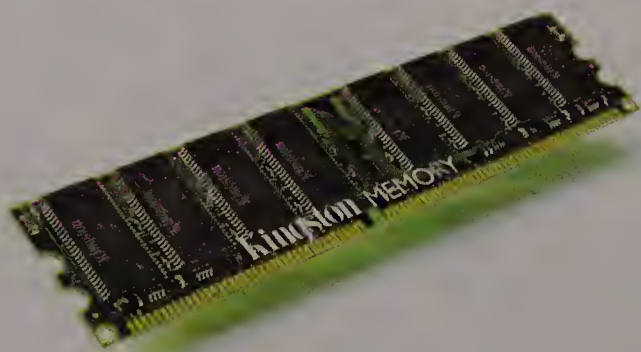
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TOP 10 PRINTERS

Visit find.pcworld.com/44922 for reviews of all products tested this month and ranked in this chart.

THE PRINTER WORLD IS TURNING wireless, with an increasing number of models offering wireless print servers as standard. HP, in particular, has started offering built-in wireless on units such as the HP Deskjet 5850 and the new Deskjet 6840 (which didn't make the chart). Both have built-

in 802.11g Wi-Fi wireless adapters—a great feature for small offices where people and their notebooks come and go.

The new Canon Pixma iP1500 debuts as the number two Best Buy. This fast, \$50 printer produced great-looking output, but unfortunately, the small cartridges don't last long.

	INKJET PRINTER	Street price (10/8/04)	Overall rating	Speed for text/color graphics (ppm)	Print quality for text/color graphics	Print quality for photos	Comments ¹
1	Best Buy HP DeskJet 5150 find.pcworld.com/39197	\$100	96	4.6/1.5	Good/Good	Outstanding	FEATURES: Rated 6.8 ppm monochrome/4.6 ppm color. 4800-by-1200-dpi maximum resolution, 150 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: Printed sharp text, well-defined line art, and detailed color photos. Optional duplexer available. (★★★★☆ June 04)
2	Best Buy Canon Pixma iP1500 NEW find.pcworld.com/44544	\$50	91	6.3/1.2	Very Good/Very Good	Good	FEATURES: Rated 25 ppm monochrome/17 ppm color. 9600-by-2400-dpi maximum resolution, 100 sheets input; one black cartridge and one tricolor cartridge. SUMMARY: This inexpensive printer produced high-quality text and color graphics output. (★★★★☆)
3	HP Deskjet 5740 NEW find.pcworld.com/44956	\$100	91	5.8/1.5	Good/Good	Good	FEATURES: Rated 23 ppm monochrome/18 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: This unit provides no-frills, high-quality printing and produced the sharpest line art we've seen from an inkjet. (★★★★☆)
4	HP Deskjet 5850 find.pcworld.com/39200	\$210	91	4.5/1.5	Good/Good	Outstanding	FEATURES: Rated 7.7 ppm monochrome/5 ppm color. 4800-by-1200-dpi maximum resolution, 150 sheets input, 50 output; black cartridge and one tricolor cartridge. SUMMARY: Print quality and speed were on a par with the Deskjet 5150's, but this model adds Wi-Fi and ethernet. (★★★★☆ June 04)
5	Lexmark Z615 Color Jetprinter find.pcworld.com/41816	\$50	90	4.3/0.5	Good/Good	Good	FEATURES: Rated 14 ppm monochrome/8 ppm color (draft). 4800-by-1200-dpi maximum resolution, 100 sheets input, 25 output; black cartridge and one tricolor cartridge. SUMMARY: Printed more attractive glossy photos than the Lexmark Z715. Colors looked light on plain paper. (★★★★☆ June 04)
6	Canon Pixma iP4000 NEW find.pcworld.com/44546	\$150	88	6.8/2.5	Very Good/Fair	Very Good	FEATURES: Rated 25 ppm monochrome/17 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 50 output; one black cartridge and one four-color cartridge. SUMMARY: This fast, attractive printer produced sharp text, but colors were somewhat flat. (★★★★☆)
7	Lexmark Z816 Color Jetprinter find.pcworld.com/42504	\$100	87	6.9/0.9	Fair/Good	Very Good	FEATURES: Rated 22 ppm monochrome/15 ppm color. 4800-by-1200-dpi maximum resolution, 100 sheets input, 25 output; black cartridge and one tricolor cartridge. SUMMARY: The Z816 was the fastest printer for text, but color was slow and had a muted, foggy look on plain paper. (★★★★☆ Aug 04)
8	HP Business Inkjet 1200d NEW find.pcworld.com/44550	\$200	87	6.5/2.6	Good/Fair	Fair	FEATURES: Rated 9 ppm monochrome/8 ppm color. 4800-by-1200-dpi maximum resolution, 150 sheets input, 150 output; one black cartridge and three color cartridges. SUMMARY: Inkjet includes a duplexer and high-capacity ink cartridges, but graphics print quality was disappointing. (★★★★☆)
9	Lexmark Z715 Photo Jetprinter find.pcworld.com/41818	\$80	82	4.7/0.5	Fair/Good	Fair	FEATURES: Rated 17 ppm monochrome/10 ppm color (draft). 4800-by-1200-dpi maximum resolution, 100 sheets input, 25 output; black cartridge and one tricolor cartridge. SUMMARY: Glossy photos looked dark and reddish. The less-expensive Lexmark Z615 printed sharper text. (★★★★☆ June 04)
10	HP Deskjet 9650 find.pcworld.com/42506	\$399	80	4.1/0.9	Good/Very Good	Outstanding	FEATURES: Rated 20 ppm monochrome/15 ppm color. 4800-by-1200-dpi maximum resolution, 150 sheets input, 75 output; one black cartridge and one tricolor cartridge. SUMMARY: Supports wide-format printing and produces nice text and color pages, but it's no speed demon. (★★★★☆ Aug 04)

FOOTNOTES: ¹ Speed ratings are for normal mode, unless otherwise noted. **HOW WE TEST:** We run time tests for text, line art, color graphics, and photo samples. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on PC World's Star Ratings. **CHART NOTES:** The overall rating for each inkjet printer is based on price (25 percent), print quality (25 percent), ease of use (15 percent), features (15 percent), speed (10 percent), and support (10 percent). Listed text speed is the average time required to print a text document and spreadsheet in different quality modes; graphics speed is the average of the speeds for printing graphics from various applications in color and grayscale.

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TOP 10 DVD DRIVES

Visit find.pcworld.com/44918 for reviews of all products tested this month and ranked in this chart.

THE SPEED CHASE is winding down, at least with respect to write-once DVD. Now that drives have hit 16X DVD±R, the focus will shift to improving other features, such as boosting rewritable and dual-layer DVD write speeds. For DVDs, 16X marks the limit at which you can safely spin a disc, experts

say. Our new chart-topping drive—the Lite-On SOHW-1633S—proved an excellent performer on all measures. The performance scores of our other Best Buy, the former number one Plextor PX-712A, remain highly competitive; but this drive is pricier and lacks double-layer support.

	INTERNAL DVD DRIVE	Street price (10/1/04)	Overall rating	Performance	Write performance (min:sec) ¹	Comments
1	Best Buy Lite-On SOHW-1633S NEW find.pcworld.com/44908	\$90	93	Outstanding	• DVD+R 6:11 • DVD+RW 10:DD • CD-R 3:D9	FEATURES: Double-layer drive, 16X DVD+R, 2.4X DVD+R double layer, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 2 and InCD 4.2), CyberLink PowerDVD 5; 24-hour daily toll-free support. SUMMARY: Inexpensive drive offers stellar all-around performance, and strong documentation and support policies to help you as needed. (★★★★☆)
2	Best Buy Plextor PX-712A find.pcworld.com/42466	\$120	93	Very Good	• DVD+R 6:31 • DVD+RW 10:D9 • CD-R 2:50	FEATURES: Single-layer drive, 12X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 8M8 buffer; Roxio Easy CD & DVD Creator 6.2 (with Drag-to-Disc and DVD 8builder) and PhotoSuite 5 SE; 11-hour weekday toll-free support. SUMMARY: Impressive performer is just a shade slower at +R than the new 16X drives (tested with cheap and plentiful 8X media). (★★★★☆ July 04)
3	Lite-On SOHW-1213S find.pcworld.com/43810	\$80	91	Very Good	• DVD+R 7:42 • DVD+RW 10:D3 • CD-R 3:D4	FEATURES: Single-layer drive, 12X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 6.3 and InCD 4.2), CyberLink PowerDVD 5; 24-hour daily toll-free support. SUMMARY: A near-twin of the Lite-On SOHW-1633S, except this drive is single-layer and has slower DVD+R write performance. (★★★★☆)
4	BenQ DW1620 NEW find.pcworld.com/44906	\$100	89	Outstanding	• DVD+R 6:12 • DVD+RW 9:13 • CD-R 3:28	FEATURES: Double-layer drive, 16X DVD+R, 2.4X DVD+R double layer, 4X DVD+RW, 16X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Sonic RecordNow 7.2 and DLA 4.9, InterVideo WinCinema 6; 12-hour weekday toll-free support. SUMMARY: This model stands out for its competitive price, comprehensive software bundle, and quick DVD write performance. (★★★★☆)
5	Memorex 16x Dual Format Double Layer Internal DVD Recorder NEW find.pcworld.com/44911	\$145	86	Outstanding	• DVD+R 6:04 • DVD+RW 10:04 • CD-R 3:D5	FEATURES: Double-layer drive, 16X DVD+R, 2.4X DVD+R double layer, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 2.1 and InCD 4.2); 9-hour weekday toll-free support. SUMMARY: Terrific but pricey performer boasts a well-rounded software bundle that includes Ahead's BackItUp and PhotoShow modules. (★★★★☆)
6	LG Electronics Super-Multi GSA-4120B find.pcworld.com/43252	\$100	85	Very Good	• DVD+R 7:11 • DVD+RW 12:D4 • CD-R 3:21	FEATURES: Double-layer drive, 12X DVD+R, 2.4X DVD+R double layer, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 5X DVD-RAM, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 6.3 and InCD 4.2), CyberLink PowerDVD 5; 13-hour weekday, 8-hour Saturday toll-free support. SUMMARY: The only drive on the chart to write to DVD-RAM; Nero software is bare-bones. (★★★★☆ Dct D4)
7	TDK Internal IndiDVD 12x+/8x-Multiformat Burner find.pcworld.com/43812	\$140	85	Very Good	• DVD+R 7:48 • DVD+RW 9:D4 • CD-R 2:44	FEATURES: Single-layer drive, 12X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Roxio Easy CD & DVD Creator 6.2 (with Drag-to-Disc and DVD 8builder), PhotoSuite 5 SE, DVDMAX Player; 9.5-hour daily toll-free support. SUMMARY: Drive has solid write-once and rewritable DVD performance; and, by a hair, it's the fastest drive we've seen at writing to CD-R. (★★★★☆ Dct D4)
8	Sony DRU-710A NEW find.pcworld.com/44912	\$150	78	Outstanding	• DVD+R 6:09 • DVD+RW 10:04 • CD-R 3:D9	FEATURES: Double-layer drive, 16X DVD+R, 2.4X DVD+R double layer, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 2 and InCD 4.2); 12-hour weekday and Saturday toll-free support. SUMMARY: Top-tier performance is coupled with a full Nero software bundle (includes BackItUp and Recode modules). (★★★★☆)
9	Sony DRU-540A find.pcworld.com/43802	\$120	76	Very Good	• DVD+R 6:57 • DVD+RW 16:25 • CD-R 3:27	FEATURES: Single-layer drive, 12X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 2M8 buffer; Ahead Nero Express 6.3 (with NeroVision Express 6.3 and InCD 4.2); 12-hour weekday and Saturday toll-free support. SUMMARY: Took nearly twice as long as comparable drives to complete our +RW tests. (Sony says a firmware update on its Web site corrects this.) (★★★★☆ Dct 04)
10	Teac DVW58G find.pcworld.com/42876	\$120	72	Very Good	• DVD+R 9:18 • DVD+RW 10:30 • CD-R 3:D6	FEATURES: Single-layer drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 40X CD-R, 2M8 buffer; Ahead Nero Express 6 (with NeroVision Express 2 and InCD 4); 9-hour weekday toll-call support. SUMMARY: This 8X model's CD-R and DVD+RW performance are in line with what we'd expect, but its DVD+R speed is 3 minutes slower than that of the cheaper, top-ranked Lite-On. (★★★★☆ Aug D4)

FOOTNOTE: ¹ We test the drives with the format specified by the vendor at review time. Write speed is the time (in minutes:seconds) to write 4.35GB to DVD using the drive's bundled mastering software; to format a blank rewritable DVD and copy 2.64GB of data to that disc; and to write 700MB of data to a CD-R. **HOW WE TEST:** We test drives under Windows XP Home on PCs with 1.67-GHz Athlon XP 2000+ CPUs and 512MB of SDRAM, using media supplied by the vendor or Verbatim. Some vendors may change drive suppliers without changing their model designations; our results reflect the configuration tested at review time. **CHART NOTES:** Overall rating is based on performance (35 percent), price (25 percent), features (15 percent), ease of installation (15 percent), and support policies (10 percent). All drives are IDE, and have a one-year warranty. See find.pcworld.com/10860 for details on PC World's Star Ratings.

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TOP 10 PDAs

TOP 100

TEST
Center

Visit find.pcworld.com/44778 for reviews of all products tested this month and ranked in this chart.

IN RESPONSE TO READER INPUT, we're splitting our *Top 10 PDAs* chart by operating system. Low price and a generous feature set propel the Dell Axim X30 to the top spot. The Asus MyPal A730 makes a strong debut with its 1.3-megapixel camera and vivid VGA screen. Another VGA-screen model,

the feature-laden HP IPaq Hx4705, also lands a chart spot. A stripped-down IPaq, the RZ1715 Mobile Media Companion, offers the lowest price on the Pocket PC chart. It's no surprise that PalmOne PDAs rule the Palm OS chart, but the new, GPS-capable Garmin IQue 3200 is an interesting alternative.

	POCKET PC PDA	Street price (9/28/04)	Overall rating	Features/ease of use	Comments
1	Best BUY Dell Axim X30 find.pcworld.com/42862	\$349	82	Very Good/ Very Good	FEATURES: Microsoft Windows Mobile 2003 Second Edition OS, 64MB RAM, 240-by-320-pixel resolution, stylus input, SD/SDIO Card slot, removable lithium ion battery, built-in Wi-Fi and Bluetooth, 4.9 ounces. SUMMARY: Bluetooth and Wi-Fi join forces with a swift processor and a bright screen to make this unit a star by any measure—and at this price, a stellar bargain as well. (★★★★★ Aug 04)
2	Asus MyPal A716 find.pcworld.com/42194	\$400	80	Very Good/ Very Good	FEATURES: Microsoft Windows Mobile 2003 OS, 64MB RAM, 240-by-320-pixel resolution, stylus input, SD/SDIO Card and CompactFlash II slots, removable lithium ion battery, built-in Wi-Fi and Bluetooth, 6.9 ounces. SUMMARY: This chunky unit is loaded with memory, slots, and communications options—but some applications, including its Wi-Fi utility, need polishing. (★★★★★ July 04)
3	Asus MyPal A730 find.pcworld.com/44440 NEW	\$500	79	Outstanding/ Very Good	FEATURES: Microsoft Windows Mobile 2003 Second Edition OS, 64MB RAM, 640-by-480-pixel resolution, stylus input, SD/SDIO Card and CompactFlash II slots, removable lithium ion battery, built-in 1.3-megapixel camera and Bluetooth, 6.0 ounces. SUMMARY: This ritzy unit brims with features—and its beautiful high-resolution VGA screen scored higher than any other on our chart. (★★★★★)
4	HP IPaq RZ1715 Mobile Media Companion find.pcworld.com/44442 NEW	\$280	79	Good/ Very Good	FEATURES: Microsoft Windows Mobile 2003 OS, 32MB RAM, 240-by-320-pixel resolution, stylus input, SD/SDIO Card slot, lithium ion battery, 4.2 ounces. SUMMARY: The least-expensive Pocket PC on our chart, this lightweight model offers the basics plus a five-way button for navigating music tracks; the photo viewer seems wasted on the low-resolution screen. (★★★★★)
5	HP IPaq Hx4705 find.pcworld.com/44636 NEW	\$650	77	Outstanding/ Good	FEATURES: Microsoft Windows Mobile 2003 Second Edition OS, 64MB RAM, 640-by-480-pixel resolution, stylus and touchpad input, SD/SDIO Card and CompactFlash II slots, removable lithium polymer battery, built-in Wi-Fi and Bluetooth, 6.6 ounces. SUMMARY: This fast, powerful (and pricey) model shows its stuff on a colorful VGA screen—but the clumsy touchpad lacks the magic touch. (★★★★★)

	PALM OS PDA	Street price (9/28/04)	Overall rating	Features/ease of use	Comments
1	Best BUY PalmOne Zire 72 find.pcworld.com/42246	\$299	82	Outstanding/ Very Good	FEATURES: Palm OS 5.2.B, 32MB RAM, 320-by-320-pixel resolution, stylus input, SD/SDIO Card slot, lithium polymer battery, built-in 1.2-megapixel camera, built-in Bluetooth, 4.8 ounces. SUMMARY: Compact and well-priced for a Bluetooth PDA; has just about everything you need for productivity and fun—but some features, such as the Real music player, could be easier to use. (★★★★★ July 04)
2	PalmOne Tungsten T3 find.pcworld.com/38027	\$399	80	Very Good/ Very Good	FEATURES: Palm OS 5.2.1, 64MB RAM, 320-by-480-pixel resolution, stylus input, SD/SDIO Card slot, lithium ion battery, built-in Bluetooth, 5.5 ounces. SUMMARY: This powerful Palm's slide-open design packs a huge, beautiful screen into a manageable package. A button on the toolbar allows you to toggle between portrait and landscape orientations. (★★★★★ Nov 03)
3	PalmOne Tungsten C find.pcworld.com/36BB7	\$399	80	Outstanding/ Good	FEATURES: Palm OS 5.2.1, 64MB RAM, 320-by-320-pixel resolution, stylus and thumb keyboard input, SD/SDIO Card slot, lithium polymer battery, built-in Wi-Fi, 6.3 ounces. SUMMARY: The only PDA from PalmOne (other than the Treo) that has a thumb keyboard. It lacks voice recording, Bluetooth connectivity, and enterprise-worthy support. (★★★★★ Sept 03)
4	PalmOne Tungsten E find.pcworld.com/38030	\$199	79	Very Good/ Very Good	FEATURES: Palm OS 5.2.1, 32MB RAM, 320-by-320-pixel resolution, stylus input, SD/SDIO Card slot, lithium polymer battery, 4.6 ounces. SUMMARY: Entry-level business Palm has a bright, exceptionally readable screen and a generous software bundle. Files must be added to an SD Card via the Palm Desktop to be recognized, which is irritating. (★★★★★ July 04)
5	Garmin IQue 3200 find.pcworld.com/4443B NEW	\$500	77	Good/ Very Good	FEATURES: Palm OS 5.2.1, 32MB RAM, 320-by-320-pixel resolution, stylus input, SD/SDIO Card slot, lithium ion battery, 5.0 ounces. SUMMARY: Designed more as a GPS device than as a PDA, this vehicle-mountable unit will certainly keep you from getting lost—but users requiring Bluetooth, a headphone jack, and other PDA extras will want to drive on by. (★★★★★)

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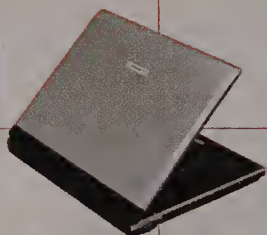


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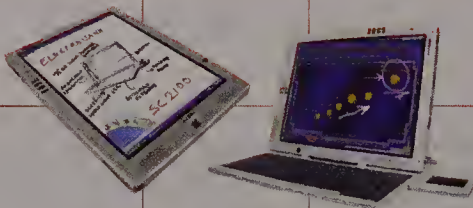
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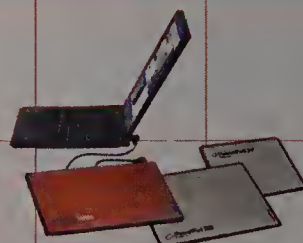
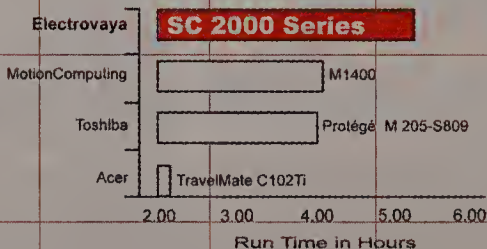
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MORE REVIEWS

MISSED AN ISSUE OF *PC World* or passed your copy along to a friend? Here's a recap of other *Top 100* topics from previous issues. To read reviews of the products listed in these charts, go online and type in the *PC World* Find-It URL at the

top of each chart. Next month in the *Top 100*, we'll look at point-and-shoot digital cameras, 19-inch LCD monitors, and rewritable DVD drives. Our Spotlight review will take a look at the latest AGP and PCI Express graphics boards.



THE \$230 SEAGATE 200GB External Hard Drive (rear) and the \$169 Seagate 40GB Portable External Hard Drive offer two different but useful types of storage options.



SONY'S LATEST digital camera, the \$449 Cyber-shot DSC-F88, has a unique rotating bar that holds the lens, flash, and viewfinder.

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From the November 2004 Issue		From the November 2004 Issue		From the November 2004 Issue		From the October 2004 Issue	

Fast Track

Syntax Groups emerges as the rising star of the LCD television market.



The Olevia line of LCD televisions offers sharp, vivid pictures and great image brilliance and clarity.

»» JUMPING INTO an already-crowded market for LCD televisions in sluggish economic times may not seem like a very good idea to most people. But to James Li and Denis Karpeles of Syntax Groups Corp. (www.syntaxgroups.com), it was a golden opportunity to showcase the unique value proposition Syntax brings to the market.

It was because of the Syntax value proposition that Karpeles, who heads sales and marketing for Syntax in the US, believed the company would succeed when it began operations here a year ago. James Li as chief executive officer meanwhile anchored the mission-critical manufacturing operations. The Syntax value proposition is multi-faceted, and includes:

- Superior technology backed by quality engineering and peerless components.
- Some of the lowest prices in the marketplace, notwithstanding Syntax's rich product specifications and high quality.
- An industry-leading warranty that includes unique free first-year on-site service and rigorous quality control re-testing before consumers carry their purchases home.
- A comprehensive, broad channel distribution plan catering to every individual buying preference.

Among the many buying choices Karpeles and his team arranged are Staples and Staples.com, hhgregg, ABC Warehouse, American TV, Micro Center, RC Willey, DataVision,

Fry's Electronics, Hartco, C4Sure, TigerDirect.com, Target.com, Amazon.com, Buy.com, Ecost.com, PC Mall, Dakota TV & Rentals, Buy Rite, Rent-A-Center, PC Connection, Tech Depot, and CompuSmart.

Zooming market share

As a result of this superior total value proposition, this aggressive and intelligent upstart has gone from zero to approximately 5% of the LCD television market—a remarkable achievement in a short period of time and amid some of the biggest brand names in consumer electronics.

Almost immediately upon entering the market, the accolades from independent sources for Syntax and its Olevia line of LCD televisions began pouring in. The LCD reviewer at *HDTV Magazine* wrote, "I like the unit so much, I plan on buying it from Syntax and using it as my bedroom television as well as my reference LCD test bed." And an unsolicited buyer posted these comments at Tigerdirect.com: "Man, this is really a magnificent deal; good quality with good price—what more can you ask for? Totally beyond my expectation. It looks to me that Syntax is a rising star..."

These and other reviewers rave about the custom features and value of Syntax's LCD television offerings. These features include the highest contrast ratios for sharp, vivid pictures, dual TV tuners, VGA and TV split screens, DVI inputs with HDCP,

ultra-thin flat-panel LCD screens, fast refresh rates and response times, and 14-16 rows of transistors for image brilliance and clarity.

And Syntax has been making waves and gathering attention at major industry trade gatherings. At this fall's RetailVision showcase, Syntax was nominated for the coveted "Best of RetailVision" award in the Best Digital Home category, prompting one observer to note that "it's taken Syntax only five months to accomplish what usually takes two years."

"We're not surprised by our success because we believe so strongly in the quality and value of what we offer to customers," notes Karpeles. "With our diverse marketing, messaging, and channel plans, we'll continue to expand our market presence and market share because we believe customers recognize a great deal and high quality when they see it."

Karpeles' comments are echoed by company CEO Li. "We are extremely pleased with our results to date, and are gratified by the outstanding support we have received from our technology and manufacturing partners as well as our associates in the retail channel," said Li. "Consumers who are intrigued by incorporating an LCD TV into their homes or offices are quickly realizing the true value of our Olevia brand."

■ For more information click now on www.syntaxgroups.com.

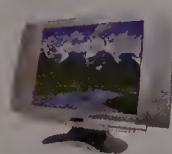
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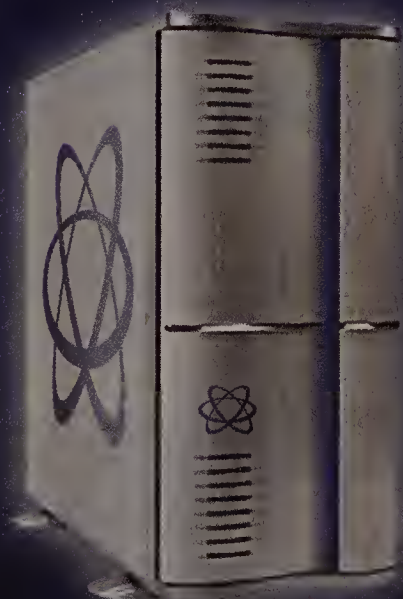
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HERE'S HOW

EDITED BY MICHAEL S. LASKY AND DENNIS O'REILLY



WINDOWS TIPS

SCOTT DUNN

Remove Unsolicited Junk From Your Context Menus

I'D LIKE TO remove several items from the menus that pop up when I right-click in Windows Explorer, especially shortcuts to programs that I don't use (such as 'Add to Zip'). How do I do it?

Francois Robert, Vung Tau, Vietnam

RIGHT-CLICK MENUS are called "context menus" because the commands they list change depending on where you right-click. File utilities, various freeware programs, and other applications add commands and submenus to some of your

context menus to make using the programs easier. Unfortunately, the more this happens, the more cluttered and less useful your right-click menus become.

Some utilities that add commands to the context menus also provide easy ways for you to customize or remove the items. This is the best and safest approach to tossing context-menu junk. If no such option is available, you can usually alter

the menus in all versions of Windows via the Registry. But first, let's look at some common offenders and their built-in menu-trimming solutions.

Unzip WinZip menus: The popular compression utility WinZip may add several commands (such as 'Add to Zip') to your right-click menu for selected items, or it may place the commands on a separate WinZip submenu. To make changes, start WinZip; if it opens in the wizard mode, click *WinZip Classic*. Choose *Options•Configuration*. In version 8.1 and later, click the *Explorer Enhancements* tab. To avoid the hassle of clicking a submenu for these commands, uncheck *Display context menu items in a submenu* (version 8.1 and later). To change the commands on the menu, check or uncheck items in the 'Context menu command' box. To get a slightly sprightlier menu, uncheck *Display icons on context menus* (see **FIGURE 1**). Finally, to remove WinZip commands from your context menus entirely, uncheck *Use shell extension* (versions 7 and 8) or *Enable Explorer enhancements*. Note, however, that this will also remove the extraction options you see when you right-drag a .zip file, and it will end your ability to drop items on a .zip file icon. When you're done, click OK.

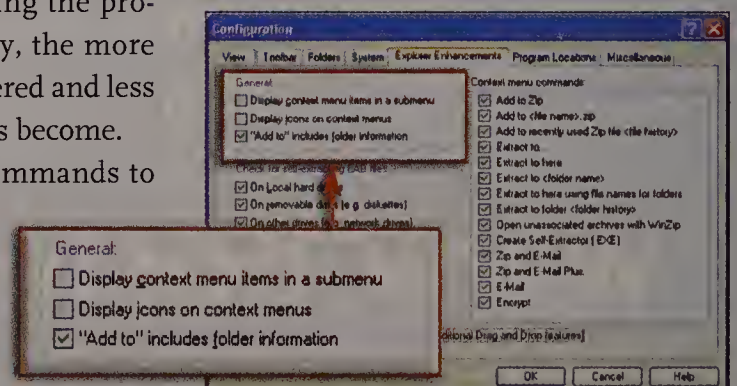


FIGURE 1: WIPE WINZIP commands from your context menu individually or all at once.

188 WINDOWS TIPS

Put the options you want—and only those you want—on your right-click menu; get a spiffier Send To menu.

192 INTERNET TIPS

Move your e-mail messages and address books to another program; stay safe by using plain-text e-mail.

196 HARDWARE TIPS

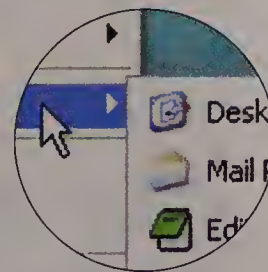
CPR for a DOA PC; making sense of hardware error messages; lock your hard-drive letters; a laptop keypad.

202 PHOTO TIPS

What do those arcane symbols on your digital camera represent, and how do they help you take your best shots?

204 ANSWER LINE

Find the cause of a CPU slowdown via Windows' Task Manager; unrestrict IE's options; make sure your floppies are still readable.



190

Disenqueue Winamp: The Winamp freeware media player may add three commands to your folder menus: 'Play in Winamp', 'Enqueue in Winamp', and 'Add to Winamp's Bookmark list'. To remove the commands, choose *Options•Preferences* (or right-click in the window or the title bar and choose *Options•Preferences*). In the tree pane on the left, select *File types* under the General Preferences branch (the Setup branch in earlier versions). Now uncheck *Show Winamp in folder context menus in Windows Explorer*

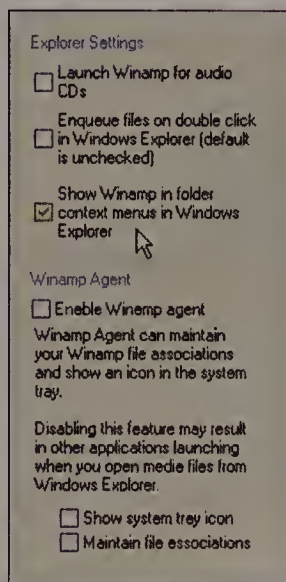


FIGURE 2: BLOCK WINAMP ADDITIONS to the context menu via the Preferences dialog box.

(see **FIGURE 2**) or *Directory context menus* in older versions; then click *Close*.

Power down PowerDesk: If you have V Communications' fabulous shareware file manager PowerDesk or PowerDesk Pro, you can fine-tune what the utility adds to your context menus. Choose *Options•Preferences* and click *Context Menus*. Each check box in this panel corresponds to one menu command; uncheck the ones you don't want (see **FIGURE 3**). To place all of them on a single submenu that cascades off your context menu, make sure that *Cascade Menus* is checked. Browse to find.pcworld.com/44016 to download the trial version of PowerDesk (registration required); PowerDesk Pro costs \$50.

Although PowerDesk's Preferences dialog box lets you remove most of its context commands, you'll still see its File Finder command when you right-click a folder. To eliminate this, see the next tip.

Restrict Explorer context menus: In Windows 2000 and XP Pro, you can use the

Group Policy tool to remove certain items from the context menu for My Computer and folders. Say you don't want the Manage option on My Computer's right-click menu (which launches the Computer Management administrative tool): Choose *Start•Run*, type **gpedit.msc**, and press **<Enter>**. In the tree pane on the left, navigate to and select *Local Computer Policy\User Configuration\Administrative Templates\Windows Components\Windows Explorer*. Double-click *Hides the Manage item on the Windows Explorer context*

menu, select *Enable*, and click *OK*.

You can still launch the utility by choosing *Start•Programs* (or *All Programs*)•*Administrative Tools•Computer Management*, or by clicking *Start•Run*, typing **compmgmt.msc**, and selecting *OK*.

To remove the entire context menu for folders, navigate to the Windows Explor-

er icon on the left as described above, and double-click *Remove Windows Explorer's default context menu* (in Windows 2000) or *Remove Windows Explorer's default context menu* (in XP). Select *Enable* and click *OK*. The next time you right-click a folder, the desktop, or any icon in Explorer, nothing will happen (toolbar context menus will still work, however). As with the previous tip, undo these changes by returning to the dialog box in question, selecting the *Not configured* option, and clicking *OK*.

Resort to Regedit: If a program doesn't provide a way to remove its commands, you may have to edit the Windows Registry. First, back it up in case something goes wrong. Browse to find.pcworld.com/44018 for step-by-step instructions.

With your backup in place, select *Start•Run*, type **regedit**, and press **<Enter>**. At the top of the tree in the left pane, double-click *HKEY_CLASSES_ROOT*. This Registry key contains data on file types, including the context menus associated with each. To trim items from the right-click menu for folders, navigate the tree diagram on the left to *HKEY_CLASSES_ROOT\Directory\shell*. Double-click *shell* to see additional keys. Each key corresponds to one command on the right-click menu for folders. You won't see Windows' built-in commands for folders (you can't remove those); but you should see folders for commands that have been added by other applications.

Back up this portion of the Registry in case you change your mind later or make a mistake. With the *shell* key selected in the left pane, choose *Registry•Export Registry File* or *File•Export Registry File*. Find a suitable location for your backup file (don't worry; it will be small), give the

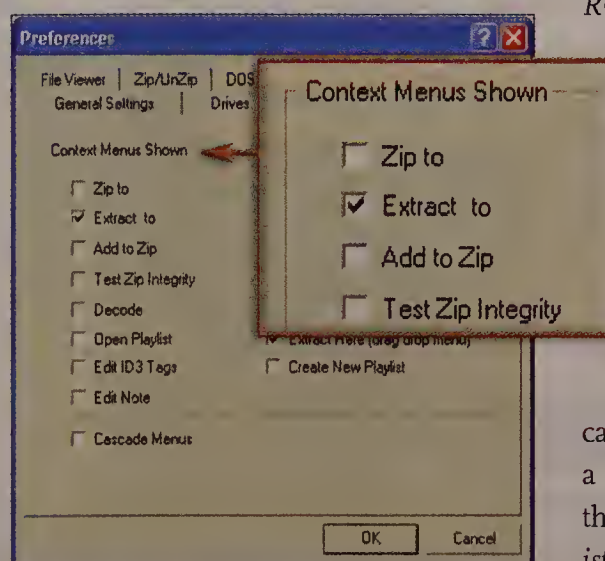


FIGURE 3: CUSTOMIZE POWERDESK context-menu options via Preferences.

file a name, and make sure that *Selected branch* is highlighted. Click *Save*, and then select the key corresponding to the menu command you want to eliminate. For example, to remove the 'Scan for Viruses' menu command installed by McAfee VirusScan, select the *VirusScan* key and press **<Delete>** (or right-click it and choose *Delete*). When you're done, select *File•Exit* to close the Registry Editor. The next time you right-click a folder, the extra command will be gone. If you change your mind, locate the Registry export file you created earlier, right-click it, and choose *Merge*. Click *Yes* and then *OK* to acknowledge the process.

Some commands that appear when you right-click a folder aren't part of the Directory key but instead are part of the Folder key—specifically, they're a subbranch of `HKEY_CLASSES_ROOT\Folder\shell`. So, for example, if you installed the utility TreeSize that I discussed in last August's *Windows Tips* column, and now you don't want its command to appear on the context menu, export a backup file of the `HKEY_CLASSES_ROOT\Folder\shell` folder, as explained above. Then select and delete the *treesize* key.

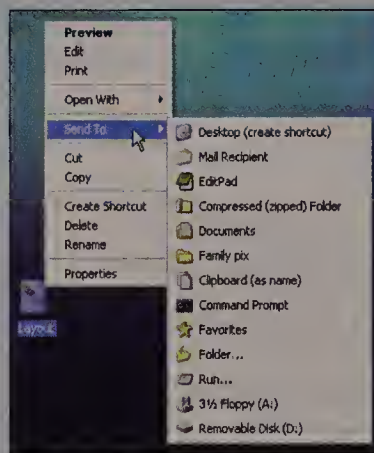
To remove similar commands for other file types, follow a similar process, deleting the appropriate key inside the shell key for the specific file-type key. Unfortunately, finding the right file-type key isn't always easy. One method is to open Windows Explorer (or any folder window), select a file whose context menu has commands you want to remove, and press **<Shift>-<F10>** to see its context menu. Note how the command appears.

Now return to the Registry Editor, and select `HKEY_CLASSES_ROOT` to begin the search there. Choose *Edit•Find* and type the name of the command that you want to remove. Make sure that *Data* is checked in the 'Look at' section, and click *Find Next*. If you're lucky, you'll find the command within a key in the shell key of a given file type. File-type keys usually contain the extension in the name—for example, "txtfile" for files with the .txt extension. That should tell you if you're on the right track. As before, export the parent key

WINDOWS TOOLBOX

Soup Up Send To With Send To Toys

OKAY, SO YOU USED this month's tips to put your context menus on a diet. But maybe you have a few items that you would like to add to them. If so, check out Send To Toys by Gabriele Ponti. This ingenious collection adds several new items to the menu you see when you right-click a file and select *Send To*. For example, you can send just a file's name and path to the Clipboard for easy pasting into an e-mail message or other destination. Or you can send that file name to a command prompt while



automatically changing the prompt's current directory to the same location. One command opens a dialog box to select a folder destination (if one isn't already present on the menu), and another sends the selected file and its path to the Run box. If you right-click a folder, you'll also have options for adding it to or removing it from the *Send To* menu. What's more, this nifty product works in all versions of

Windows and is completely free. Visit find.pcworld.com/44020 to download a copy.

(such as the shell key) for any keys you delete, in case you make a mistake and need to undo the damage. Then select the key nested within shell and press **<Delete>**.

More Registry revisions: In some cases, the same context-menu commands are present for multiple file types whose icons you may right-click. You can remove some of these commands by first opening the Registry Editor as described above, and navigating to and selecting `HKEY_CLASSES_ROOT\*\shellex\ContextMenuHandlers`. Choose *Registry•Export Registry File* or *File•Export Registry File* to back up this section of the Registry, and then look for keys underneath this branch that correspond to the menu items you want to remove. For example, to delete the commands that Adobe

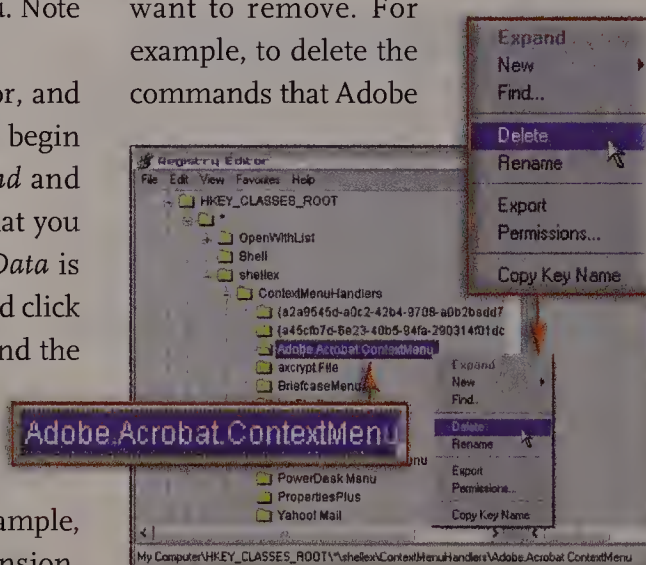


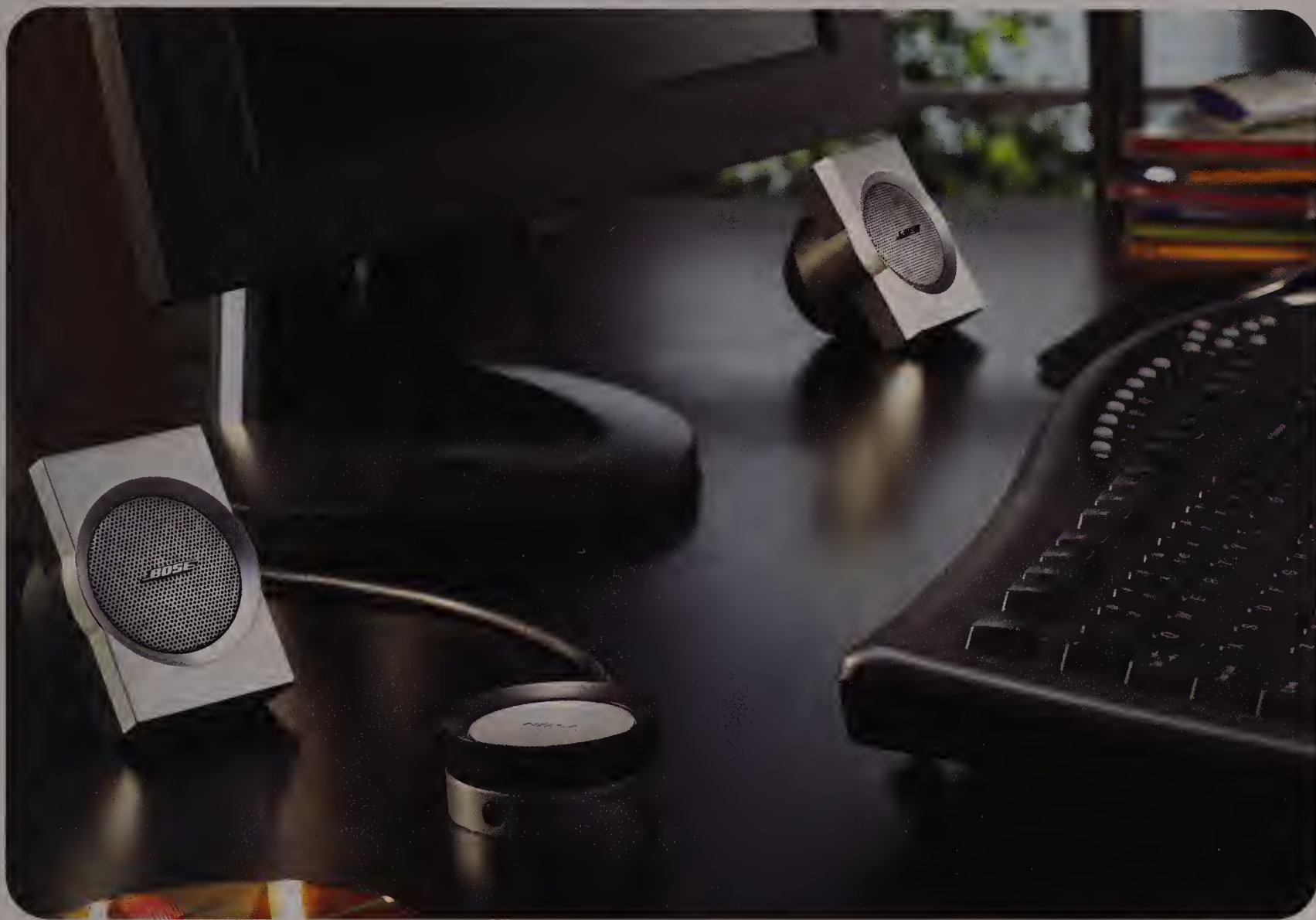
FIGURE 4: EXCISE CONTEXT menu intrusions permanently by editing the Windows Registry.

Acrobat 6 adds to many file types, select the *Adobe.Acrobat.ContextMenu* key and press **<Delete>** (see **FIGURE 4**), or right-click it and choose *Delete*. To remove the 'Open With' submenu that appears on file context menus, delete that key. If you want to undo the action, merge your exported Registry-key file back into the Registry as explained in the previous tip.

Learn to live with it: Every application that customizes the context menu does so in its own way. In some cases you may need to hunt through dialog boxes, scour the application's help file, or scan the vendor's Web site to find out how to remove context-menu entries. In other cases you have to accept that some context menu commands are there to stay. For example, though you can use the Registry editing tip above to remove the 'Scan for Viruses' command added by McAfee VirusScan, I have encountered no way to remove the context-menu commands added by Norton AntiVirus. Your only option in these cases is to live with the extra clutter and to contact the software manufacturer to voice your opinion on this subject. ■

Send your Windows questions and tips to scott_dunn@pcworld.com. We pay \$50 for published items. Visit find.pcworld.com/31607 for more Windows Tips. Scott Dunn is a PC World contributing editor.

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INTERNET TIPS

SCOTT SPANBAUER

STREAMLINE YOUR
E-MAIL FILESMOVE MESSAGES
BETWEEN APPSSTAY SAFE WITH
PLAIN OLD TEXTWhere Are My E-Mail,
Addresses, and Calendars?

COMPUTING FREEDOM means being able to find, protect, and move our data from computer to computer, and from application to application. E-mail is perhaps the most crucial communication tool we use at work and home, but it can also be the one that makes us feel the least free. Want to export your Outlook

e-mail reader), follow these steps to back up your messages and contacts or to move them to another program.

FIRST, SLIM DOWN

BEFORE YOU attempt any major movement of e-mail or contact files, do yourself a huge favor and streamline your mes-

sages. Get yourself a good antispam tool and use it to jettison the outright junk. Then delete, delete, delete. Next, archive your old messages to eliminate stuff you're not likely to need.

Outlook: This program is notorious for generating huge data files that can take a lot of time to copy or move, especially if you're doing so over a network. To archive older Outlook messages into a separate .pst file (thereby streamlining Outlook's memory consump-

tion), choose *File•Archive*, select *Inbox*, and click the *Archive this folder and all subfolders* option. Choose a date in the 'Archive items older than' drop-down menu, edit the target archive file name in the 'Archive file' field to your satisfaction, and click *OK*. After archiving old items, free up disk space by compressing the .pst file. Choose *File•Data File Management*, select your main .pst file (outlook.pst, unless you have specifically configured Outlook to use a file with a different name), and click *Compact Now*.

Outlook Express: Though it lacks Outlook's archiving tools, OE does compact mailbox files to reduce wasted space. Choose *Tools•Options*, select the *Maintenance* tab, and click *Clean Up Now•Compact*. To archive mail manually, move messages from the inbox into subfolders, which OE stores in separate .dbx files (see the Outlook Express item "Next, Back Up" below for details).

Mozilla 1.7, Netscape 7.1, and Thunderbird 0.7: Mozilla's mail programs also lack archiving tools—which means you'll have to settle for deleting items one by one, or moving them into separate folders. As with Outlook Express, you can archive messages manually using folders, which all three programs store as separate, plain-text files (see **FIGURE 1**). But the programs do offer a mailbox-compaction command. Choose *Window•Mail & Newsgroups* in Netscape or Mozilla, or launch the separate Thunderbird program and select *File•Compact Folders*.

NEXT, BACK UP

BACK UP YOUR FILES: Copy them from one folder or computer to another using Windows Explorer, burn them to a CD with a CD-burning program, or use a backup program—one way or another, get them backed up. Here's where to find the files to back up in Windows XP:

Outlook: In Windows XP, Outlook 2003 parks your data in the folder *C:\Documents and Settings\username\Local Settings\Application Data\Microsoft\Outlook*, where *username* is your

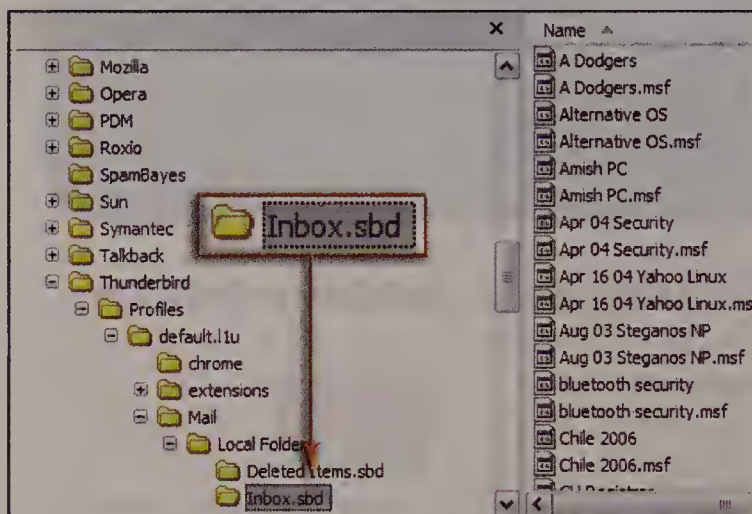


FIGURE 1: THE EASY WAY TO ARCHIVE Mozilla, Netscape, or Thunderbird mail is by moving all of your messages into folders, and then simply backing up those folder files.

messages to Mozilla? Good luck. Wish you could transfer all of your Eudora addresses into Mozilla Thunderbird's little black book? Me too. We know for a fact that our messages and contact addresses and phone numbers are in there, someplace. But *where*, exactly?

Fear not—you can relocate your e-mail in most cases. If you send and receive messages using the latest versions of Microsoft Outlook or Outlook Express, Netscape Mail, or Mozilla.org's Mozilla Mail (or its lean-and-mean Thunderbird

PARANOID? PUT OUTLOOK
ON A PLAIN-TEXT DIET

SECURITY THREATS that enter your PC by e-mail usually sneak in through a file attachment. But HTML messages that look like Web pages can contain scripts or images that could also exploit vulnerabilities in Outlook or Internet Explorer. To ward off any possibility of these (and in doing so, give up your graphical e-mail content), in Outlook 2003 choose *Tools•Options*, select the *Preferences* tab, click *E-mail Options*, select *Read all standard mail in plain text*, and click *OK* twice.



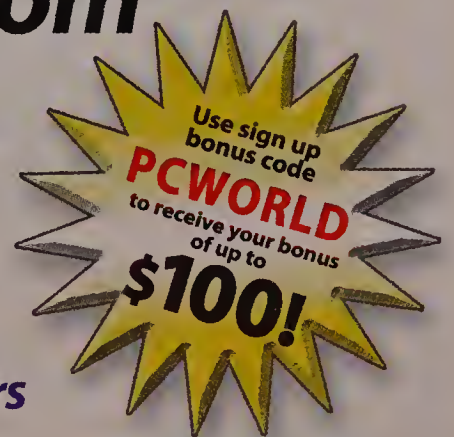
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Windows XP user account (log-on) name. You can also make a backup copy of your entire Outlook.pst file from within Outlook. Choose *File•Import and Export*, select *Export to a file*, click *Next*, choose *Personal Folder File (.pst)*, and click *Next* again. Select the folder you want to back up (to back up everything, choose *Personal Folders* and check *Include subfolders*; see **FIGURE 2**), click *Next*, and then *Finish*.

Outlook Express: To find your inbox.dbx file (and the other .dbx files that contain

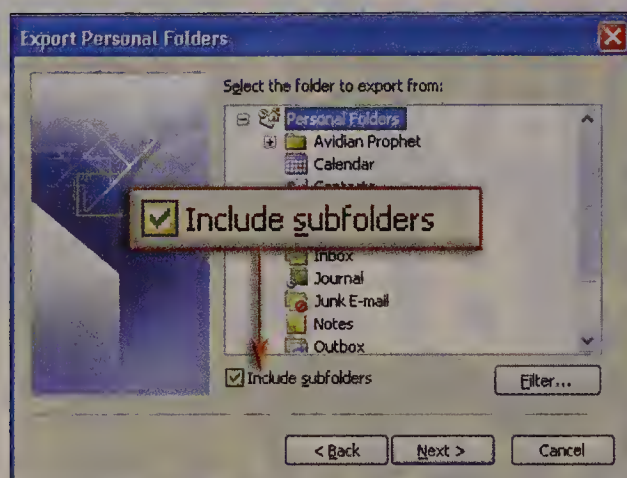


FIGURE 2: BACK UP ALL YOUR Outlook mail at one time by choosing these options in the Export wizard.

each Outlook Express subfolder), choose *Tools•Options*, select the *Maintenance* tab, and click *Store Folder*. To locate your address book, select *Tools•Address Book* and select *Help•About Address Book*. The window that opens includes the exact path.

Mozilla 1.7, Netscape 7.1, and Thunderbird 0.7: Under Windows XP, Mozilla's three e-mail programs store their mail files by default to three locations under the \Documents and Settings\username\Application Data folder. To find the exact location of your mail files, right-click *Local Folders* in any of the three programs, choose *Properties*, and look for the long file path shown in the 'Local directory' field.

THEN, IMPORT AND EXPORT

GETTING YOUR MESSAGES and contacts from one program to another can involve any one of a number of scenarios: Sometimes you have to export data using the current program; sometimes the new program knows how to import the files itself; and sometimes you need to know a trick or two to get them converted.

Outlook: Microsoft's flagship mail pro-

gram doesn't give up its data easily. Your best bet for getting mail from Outlook into another program is to use the other program's import feature. Nevertheless, Outlook's generic data-export ability can help you move contacts into OE's address book. Choose *File•Import and Export•Export to a file*, click *Next*, select *Comma separated values (Windows)*, click *Next* again, select the *Contacts* folder, click *Next* yet again, browse to a destination folder, click *Next* one more time, and then choose *Finish*. (See below for steps to import the file into OE.)

Outlook Express: Like Outlook, OE is less than brilliant when it comes to exporting and importing mail and contacts to and from other programs. It exports messages only to Outlook or Microsoft Exchange, and it exports contacts only to a plain text file or to Exchange. To copy your messages and contacts from OE into another program, use that program's own import facility.

Outlook Express can import your mail from Outlook or previous versions of Outlook Express, Netscape Communicator, and Eudora (you can also use Eudora to import the plain-text mailbox files used by Mozilla, Netscape, and Thunderbird). To import messages from these four programs, choose OE's *File•Import•Messages*, select the program to import from, and click *Next* (see **FIGURE 3**). You can also import e-mail account settings from Exchange or Outlook by choosing *File•Import•Mail Account Settings*, selecting *Microsoft Windows Messaging or Exchange or Outlook*, and clicking *Next* twice. Note: Only the programs for which you currently have e-mail account settings will be offered for selection.

Be forewarned that when you import messages from Outlook, OE treats Outlook's Contacts, Tasks, and Calendar entries as e-mail messages, and your Notes don't transfer at all. You can just delete all three folders in OE when the import process is completed (the program doesn't handle to-do items or appointments anyway). To get your Contacts out of Outlook and into OE's address book,

first export them from Outlook to a CSV file (see below); next, in OE, choose *Tools•Address Book*, and from there, choose *File•Import•Other Address Book*, select *Text*

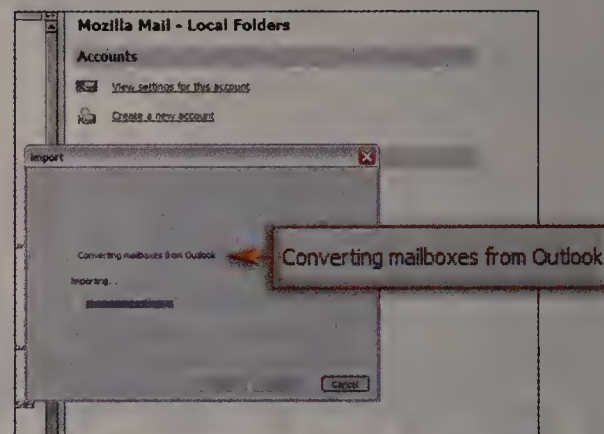


FIGURE 3: IMPORT YOUR OUTLOOK mail easily into the Netscape, Thunderbird, or Mozilla (shown here) mail reader, but be warned—it's a one-way trip.

File (Comma Separated Values), click *Import*, browse to and select the CSV files you just created in Outlook, and click *Next•Finish* to import the data.

Mozilla 1.7, Netscape 7.1, and Thunderbird 0.7: These three programs offer no export options at all, but they're adept at importing mail, addresses, and even mail account settings from Outlook, Outlook Express, and Eudora. To import any of the above, choose *Window•Mail & Newsgroups* in Mozilla or Netscape, or launch the separate Thunderbird program, and then select *Tools•Import*. Choose among *Address Books*, *Mail*, and *Settings*, and click *Next*. Select the program you want to import from and click *Next* again. Repeat for each of the three kinds of data.

Like Outlook Express, none of these three e-mail readers handles Outlook's Notes, Tasks, or Calendar items. However, there is a workaround: You can import Calendar appointments into the Calendar extension that works with either Mozilla or Netscape, or the Firefox browser that corresponds to Thunderbird. See last May's *Internet Tips* column (find.pcworld.com/43972) for instructions. ■

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HARDWARE TIPS

KIRK STEERS

**MAKE SENSE OF
ERROR MESSAGES**

**DIAGNOSE DEVICES
ONE AT A TIME**

**A HANDY LAPTOP
NUMERIC KEYPAD**

Resuscitate a Stalled PC

WHEN WINDOWS ACTS up, you can run a troubleshooting utility such as Easy Desk Software's RegRepair (free to try, \$30 to keep; find.pcworld.com/44052), use System Restore to turn back the clock, or in the worst cases reinstall the operating system. But what do you do when your PC fails before Windows even starts? If your machine greets you with nothing more than a few beeps and a blank screen, prepare for a very late (or very early) lunch.

All is not lost, though. You might be able to revitalize a flatlining computer simply by tightening a loose connection. But the problem could also be as complex—and as expensive—as a shot CPU, motherboard, or other major component. Before you can decide whether a hardware repair is worth the time and money, you have to find the source of the trouble. Here is my approach to PC diagnostics.

GOT JUICE?

IF YOU TURN ON your PC and absolutely nothing happens—no indicator lights, beeps, clicks, whirs, or flashes on your monitor screen—your PC isn't getting power. Look for a lit LED on the system's case and the sound of the power supply's exhaust fan (if it exists) spinning.

Before you conclude that your power supply is dead, make sure all power cords are plugged in at both ends. Check the brightness and contrast settings on your monitor to ensure that they aren't at their highest or lowest levels. And take a close look at your uninterruptible power supply or surge protector—it may have a fuse or a circuit breaker that has tripped.

If everything outside the box checks

out, unplug all the cables, open the PC's case, and verify that the power connectors for each internal component are seated firmly. Keep in mind that electric charges from your body can destroy your system's delicate circuitry. Whenever you venture inside your machine's case, use a grounding strap that attaches to your wrist (available at most computer stores for less than \$15), or ground yourself beforehand by touching a water pipe, lamp, or other grounded object.

Your PC's power wires run through a plastic container from the power supply to each device joining it. One bad connection won't account for complete power loss, but it will shut down a critical component such as your hard drive. To check

your power supply for signs of life, test it with a device like the \$8 ATX Power Supply Tester from PC Power and Cooling (www.pcpowerandcooling.com).

If you find that your supply has indeed gone belly up, replace it. A new power supply is a lot cheaper than a new system. A good 250-watt supply costs less than \$50, and anyone with even a smidgen of mechanical aptitude can install it. Just disconnect the power line for each component, remove a few screws, and then do the reverse for the new supply. (Make sure everything is unplugged before you start working, of course.)

Your new power supply must have sufficient wattage to run your PC. If you've loaded your system with extra hard drives, expansion cards, or a power-hungry graphics card, you may have overloaded your old power supply. Visit find.pcworld.com/44056 for a guide to calculating your computer's wattage requirements.

CALL TO POST

IF YOUR PC IS GETTING all the power it needs but still won't boot up, it may be trying to tell you something. Look and listen to its hardware tests for clues: Every time your PC starts, it performs a Power On Self Test that alerts you to errors via a series of beeps (if an error is detected ►

Boot-Up Error Messages

SOMETIMES YOUR PC will tell you where it hurts. Watch for these errors as it boots.

ERROR MESSAGE	Meaning	Solution
K/B Interface Error A20 Line 8042 Gate Memory Error	The keyboard connector on your motherboard is bad.	If the connection hasn't simply come loose, you may need to replace the motherboard.
Keyboard is locked out— Unlock the key	A key on the keyboard is stuck.	Unlock and/or clean the keys.
CMOS Checksum error CMOS information invalid Real time clock failure	You have a bad CMOS battery or corrupted BIOS/CMOS data.	Run your CMOS setup, or replace your CMOS battery.
HDD Controller Failure	Your PC can't link to your hard drive.	Check your drive and motherboard for loose cables.
Fixed disk failure C: DRIVE FAILURE Primary master hard disk fail	This may be a serious hard-disk problem.	Remove your hard drive, install it as the second drive on another system, and run a drive-diagnostics program on that PC.
No boot sector on hard-disk drive	Your PC can't find the drive's boot sector.	Make sure the drive's CMOS settings are correct. Install the drive on a second system, and run a diagnostics utility on that PC.
Memory address line failure at xxxx	You have a RAM error.	Remove and reseat the memory modules on your motherboard.

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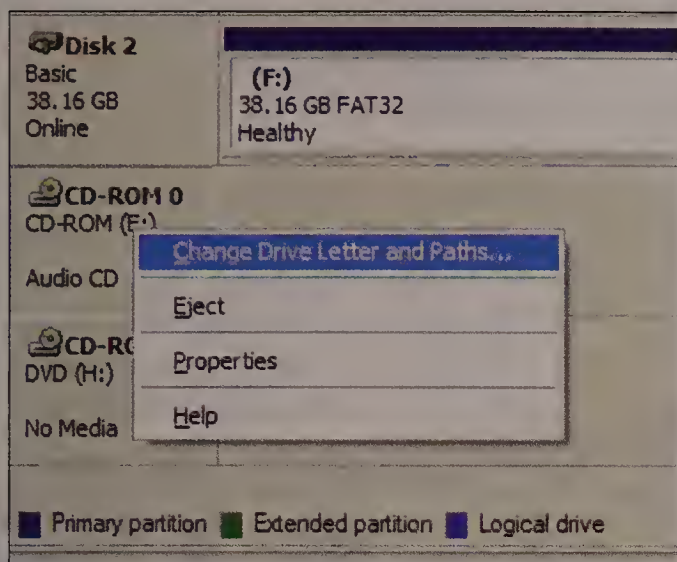


FIGURE 1: FREEZE YOUR DVD DRIVE'S assigned letter via the Disk Management utility in Windows XP and 2000.

before the graphics card has initialized) or via messages displayed on your screen.

These POST error messages and beep codes vary from vendor to vendor; you'll have to check your PC maker's Web site for explanations of individual messages or codes (see chart on page 196).

Some error messages clearly state the source of trouble, such as 'Fixed disk failure' or 'CMOS battery failed'. Many other error messages are more cryptic. Even if you don't understand it, write the message down. If you end up talking to a service technician, having this message handy could save you time and maybe even some money.

After POST has completed, watch for other on-screen announcements. As your computer initializes different components, it often displays a brief confirmation; if it detects a problem, it shows an error message. If your PC locks up during the boot process, note the last device displayed on screen—that part may be the source of the problem.

Sometimes these messages flash across the screen so fast you can't read them. To freeze an on-screen message—and the boot process—press the <Pause> or <Break> key on your keyboard. When you're ready to continue, just press any key.

You can also employ a diagnostic utility such as #1-PC Diagnostics' excellent #1-TuffTest, which doesn't need Windows to run. Just put the application's disk in the floppy drive and reboot your system. The program checks your memory and other hardware components. Browse to find.pcworld.com/44060 to download the free trial version of the \$10 #1-TuffTest-Lite (the Pro release costs \$30).

You can rule out your hard drive as the source of trouble by booting your PC from its floppy drive or optical drive. To do this, go into the PC Setup program and change its Boot Order setting (the exact wording may vary) so that your floppy and/or optical drives are listed before the hard drive in your system's boot order. Access your PC

Setup program by pressing the appropriate key (often <Delete> or <F1>) as your computer starts. If your display doesn't tell you how to access PC Setup, look in your manual for the proper procedure.

INSIDE JOB

ONCE YOU'VE determined that your hard drive is healthy, remove and reconnect all the power connections, expansion cards, hard-drive cables, and RAM modules inside the PC's case. Make sure each cable and card has a solid connection.

If all else fails, remove everything from your system except the motherboard, keyboard, and graphics card. If your PC reboots without trouble, you know one of the removed components is the culprit. Reinstall the devices one by one until the problem reappears, and then replace or repair (probably replace) the offending component. If the problem recurs ►

NUMBERS TO GO

IF YOU FREQUENTLY enter numbers into your laptop, you know what a hassle it is to work with numeric keys integrated into the keyboard. Often the design staggers the key layout and requires that you press a function key to toggle the keypad into and out of its active state. Kensington's \$39 Pocket Keypad Calculator (www.kensington.com) lets you take a standard keypad on the road. The compact device doubles as a business calculator, and its USB cable automatically retracts when not in use.

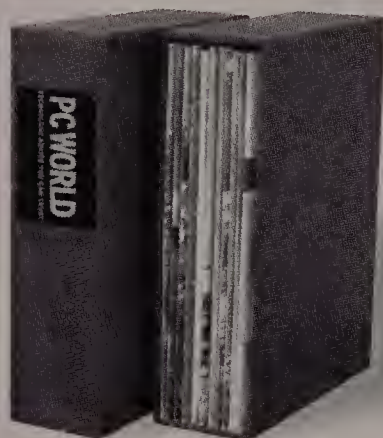


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HERE'S HOW

after you first remove the extra hardware, you've probably got a bad graphics card or motherboard. To check your graphics card, install it in a different PC to see if it works there. If possible, put a different graphics card in your current PC to see if that rectifies the problem.

The last suspect is your motherboard. You can replace it, but buying a new PC may be more economical. Go to find.pcworld.com/44070 for more on motherboard repair versus replacement, from last July's *Hardware Tips* column.

LEAPIN' LETTERS

I BACK UP to my DVD and USB flash drives. Recently I added a second hard drive with several partitions, which changed the drive-letter assignments, forcing me to reconfigure my backup software. Is there a way to freeze the drive letters for my DVD and flash drives so this won't happen?

Mary Tinker, Fargo, North Dakota

WINDOWS ALWAYS assigns a letter to the hard drive(s) first, starting with C:, and then to other devices. Letters are assigned sequentially in ascending order, so non-hard drive devices get their letters bumped up a notch when a new hard drive or partition is added to the system.

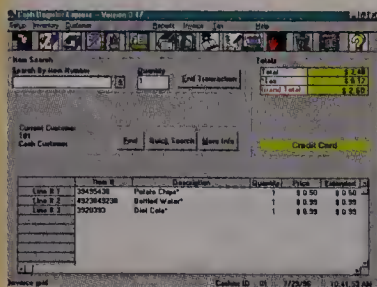
To make the letter for your DVD drive, USB flash drive, or any other storage device permanent, assign it one of the letters from M through Z. In Windows XP and 2000, open Control Panel, click *Performance and Maintenance* in Category view, and click *Administrative Tools•Computer Management•Storage•Disk Management*. Right-click the drive, select *Change Drive Letter and Paths*, and choose your letter (see **FIGURE 1**).

In Windows 98 and Me, open Control Panel, click *System•Device Manager*, and double-click the drive whose letter assignment you want to change. In the Reserved Drive Letters section under the Settings tab, set both 'Start Drive Letter' and 'End Drive Letter' to the letter you prefer. ■

Go to find.pcworld.com/31511 for past *Hardware Tips* columns. Send your tips and questions to kirk_steers@pcworld.com. We pay \$50 for published items. Kirk Steers is a PC World contributing editor.

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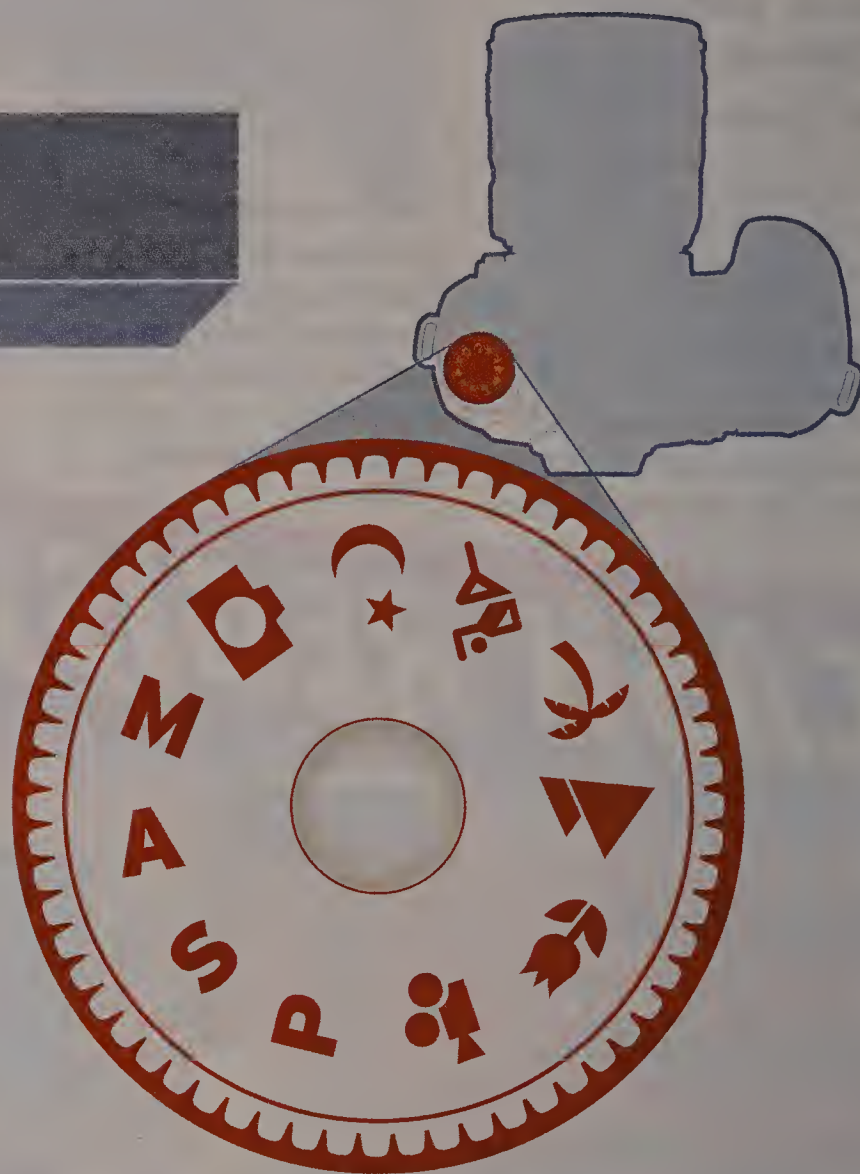
PHOTO TIPS

DAVE JOHNSON

What Are All Those Camera Icons?

IT'S NO SURPRISE that Windows applications are filled with arcane icons, buttons, and menu options. But the dizzying array of esoteric symbols on digital cameras makes deciphering your computer icons seem like child's play. That's because digital cameras pack dozens of features into a miniature gadget. Complex concepts must be translated into single icons, such as an eyeball-shaped one that signifies automatic red-eye reduction. Here's a crib sheet for figuring out the meaning of the most common icons adorning your camera's settings dial. ■

Dave Johnson writes the Digital Focus online newsletter for PCWorld.com. Visit find.pcworld.com/41135 to sign up.



A KEY TO CAMERA ICONS: MAKING SENSE OF THE SYMBOLS

Auto Mode When you want to take snapshots without worrying about the mechanics of photography, leave this setting on Auto. This mode sets all exposure levels automatically, and it usually locks you out of making any minor adjustments manually.

Manual Mode This mode gives you total control. You use buttons on the camera's body to set both shutter speed and aperture size. Remember, though, that you're working without a safety net—the camera won't protect you from under- or overexposure.

Aperture Mode When you set the size of the aperture, your camera automatically provides the right shutter speed to deliver a correct exposure. Rely on this mode to blur the background or to keep the entire image in sharp focus.

Shutter Mode This setting is your best option for taking action photography. Shutter priority allows you to freeze the scene or artistically blur the picture. All the while, the camera keeps the exposure matched to the aperture.

Program Mode Like Auto mode on steroids, this mode automatically sets aperture size and shutter speed for a perfect exposure—but it also lets you tweak settings, giving you more creative control. You can change white balance and exposure compensation, for instance, and even nudge shutter speed up or down a bit.

Movie Mode Many cameras let you record MPEG or QuickTime videos to the same memory card storing your photos. The videos aren't sharp enough for DVD, but they're great for e-mail.

Macro Mode To focus on extremely close subjects—say, within a few inches of the lens—choose the tulip. You can take life-size pictures of insects, flowers, and other small subjects in this mode, but the focus range at such distances is very narrow.

Landscape Mode In this mode, your camera picks the best aperture and shutter settings for the depth of field that you want when taking pictures of landscapes and other outdoor tableaux.

Sand and Snow Brightly colored or glaring backgrounds can trick the camera into underexposing the subject. This mode overexposes the scene to gain details that would otherwise be lost.

Action The Action (sometimes called Sports) mode sets the camera to the highest possible shutter speed, increasing your odds of getting a clear shot of squirming kids, for example.

Night This mode lets you capture nighttime scenes by combining a flash, which freezes people in the foreground, with a slow shutter speed, which allows lights from buildings, cars, and other elements to show in the background.

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ANSWER LINE

LINCOLN SPECTOR

What's Pushing My CPU Into the Danger Zone?

? TWO DAYS AGO my CPU usage jumped to 100 percent, slowing the computer beyond use. Any ideas on what happened and what to do about it?

April Turkett, Morristown, Tennessee

AN OVERLOADED CPU can make a PC unbearably slow. If the CPU spikes happen rarely and correct themselves quickly, don't worry about it. But if they keep coming back or don't go away, you have to find out what's wrong and fix it.

The most obvious culprit is a virus, spyware, or some other malicious software. Scan your system regularly with a good spy-catching program such as Lavasoft's Ad-Aware or Patrick M. Kolla's Spybot Search & Destroy. They're free, so why not use both of them? Go to find.pcworld.com/44072 for the downloads. Next, update your antivirus definitions and run a full virus scan. Set your antivirus program to check for updates and do a full scan automatically at least once a week.

If virus and spyware scans don't find the problem, it may be due to a malware program that's too new to be caught. More likely, however, is an unintended problem with an honest program.

If your system's CPU spike is constant, the software at fault probably loads when Windows boots. Select **Start•Run**, type **msconfig**, and press **<Enter>**. Click the **Startup** tab, uncheck suspicious options one at a time, and reboot until the problem stops. Windows 2000 lacks this utility; for this OS, visit find.pcworld.com/44074 to download Startup Control Panel, Mike Lin's free alternative.

If the processor overload occurs intermittently, note what you're doing each time the system slows down: the pro-

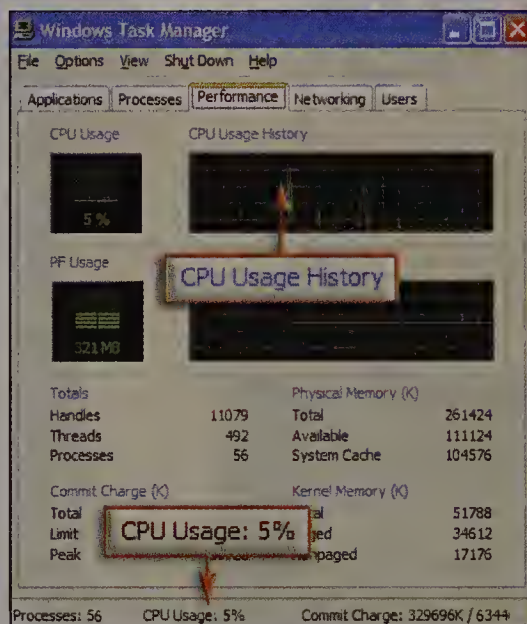


FIGURE 1: TASK MANAGER CAN tell you whether your CPU is overloaded, and then help you pinpoint what is causing that.

grams you're running, the Web sites you visited that day, and so on. This information may give you a clue.

In Windows XP and 2000, the Task Manager can show you what's chewing up CPU cycles. Press **<Ctrl>-<Alt>-<Delete>** (in Windows 2000, click *Task Manager*). Choose **Processes** to see your running programs and subroutines. The CPU column shows the available CPU cycles that each process is running. You can easily find the problem here. The Performance tab shows your CPU usage (see **FIGURE 1**). Hover the cursor over the Task Manager icon in your system tray to see the current CPU usage in a pop-up window.

Keep the System Idle Process running, even if it's huge. This process shows the percentage of CPU cycles that are *not* in use, so in this case, the bigger, the better.

Once you've found the processor glut-ton, get rid of that program. If it's some-

thing you can't do without, determine whether an updated version with a bug fix is available, or look for a competing program that does a better job.

CAN'T CHANGE IE SETTINGS

? I CAN'T OPEN Internet Explorer's Tools•Internet Options dialog box because of "restrictions." How can my Administrator account be restricted?

Randy Drury, via the Internet

YOU CAN FIX THIS by editing the Windows Registry. First, back up the Registry (see find.pcworld.com/44076 for details). Then select **Start•Run**, type **regedit**, and press **<Enter>**. Navigate in the Registry Editor's left pane to **HKEY_CURRENT_USER\Software\Policies\Microsoft\Internet Explorer\Restrictions**. Select **NoBrowserOptions**, press **<Enter>**, and change its value to **0**. Do the same at **HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Internet Explorer\Restrictions**. The easy workaround is to select **Start•Settings•Control Panel** (**Start•Control Panel** in XP) and double-click the *Internet* icon.

Send your questions to answer@pcworld.com. Answer Line pays \$50 for published items. See find.pcworld.com/31577 for more Answer Line columns. You'll find Contributing Editor Lincoln Spector's humorous and other writings at www.thelinkinspector.com.

CHECK THOSE FLOPPIES

GUNTHER STEINBERG of Portola Valley, California, who describes himself as a "former expert researcher in magnetic media," has some good advice about those emergency boot floppies and rescue disks that Windows and other programs instruct us to make: Don't assume that they're good. Floppies can accumulate bad sectors in a matter of weeks. To confirm that they still work, check them every few months—either by booting from the floppy or by evaluating it with a disk-scanning tool: In Windows 98 and Me, select **Start•Programs•Accessories•System Tools•ScanDisk**. In Windows 2000 and XP, choose **Start•My Computer**, right-click the floppy drive, select **Properties**, and click **Tools•Check Now**.

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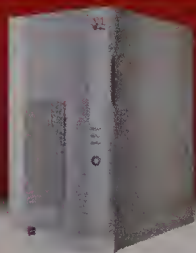
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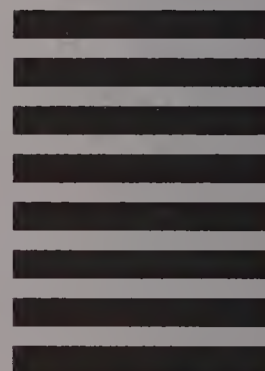
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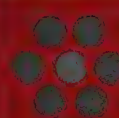
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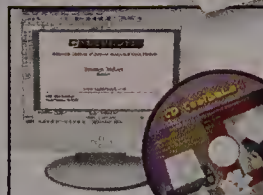
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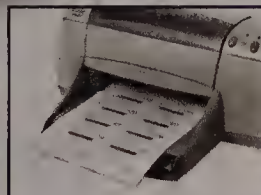
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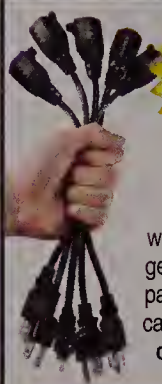
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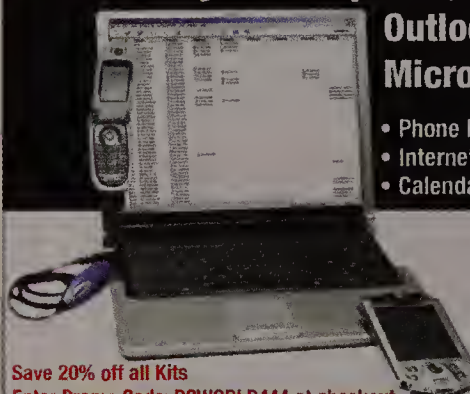


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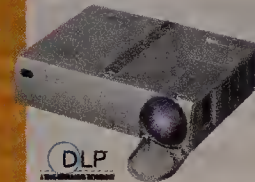


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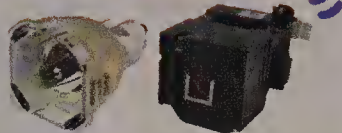
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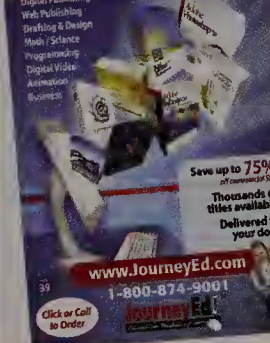
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1. PC World
2. Publication No: 07378939
3. Date of filing: October 6, 2004
4. Published monthly
5. No of issues published annually: 12
6. Annual subscription price: \$24.95
7. Known office of publication: 501 Second Street #600, San Francisco, CA 94107
8. Complete mailing address of the headquarters or the general business office of the publisher: PC WORLD COMMUNICATIONS INC., 501 Second Street #600, San Francisco, CA 94107
9. The names and addresses of the president and CEO, publisher, editor, and managing editor are: President and CEO: Jeff Edman, PC WORLD COMMUNICATIONS INC., 501 Second Street #600, San Francisco, CA 94107; Publisher: Bob Ostrow, PC WORLD COMMUNICATIONS INC., 501 Second Street #600, San Francisco, CA 94107; Editor: Harry McCracken, PC WORLD COMMUNICATIONS INC., 501 Second Street #600, San Francisco, CA 94107; Managing Editor: Kimberly Brinson, PC WORLD COMMUNICATIONS INC., 501 Second Street #600, San Francisco, CA 94107.
10. The Owners: International Data Group Inc., Patrick McGovern, 5 Speen St., Framingham, MA 01701.
11. The names and addresses of stock holders owning or holding 1% or more of the total amount of stock are listed below. - None.
12. Unchanged
13. PC World
14. Average 11/03-10/04: Last Published Issue 10/04
15. Extent and nature of circulation
Average no. Copies Each Issue during Preceding 12 Months: A. Total Number of Copies (net press run) 1,268,862; Paid and/or Requested Circulation: 1. Outside-County Mail Subscriptions 858,352; 2. Paid In-County Subscriptions - N/A; 3. Sales through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution 201,450;
4. Other Classes Mailed through the USPS - N/A; C. Total Paid and/or Requested Circulation 1,059,802; D. Free Distribution by Mail: 1. Outside-County 5,009; In-County - N/A; Other Classes Mailed through the USPS - N/A; E. Free Distribution Outside the Mail 1,083; F. Total Free Distribution 6,092; G. Total Distribution 1,065,894; H. Copies Not Distributed 202,969; I. Total 1,268,862; J. Percent Paid and/or Requested Circulation (15C divided by 15G times 100) 99.43%.
- No. Copies Single Issue Published Nearest to Filing Date: A. Total Number of Copies (net press run) 1,233,989; Paid and/or Requested Circulation: 1. Outside-County Mail Subscriptions 828,625; 2. Paid In-County Subscriptions - N/A; 3. Sales through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution 219,144;
4. Other Classes Mailed through the USPS - N/A; C. Total Paid and/or Requested Circulation 1,047,769; D. Free Distribution by Mail: 1. Outside-County 5,333; In-County - N/A; Other Classes Mailed through the USPS - N/A; E. Free Distribution Outside the Mail - 0; F. Total Free Distribution 5,333; G. Total Distribution 1,053,102; H. Copies Not Distributed 180,887; I. Total 1,233,989; J. Percent Paid and/or Requested Circulation (C divided by G times 100) 99.49%.
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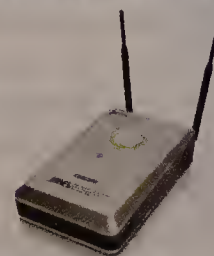
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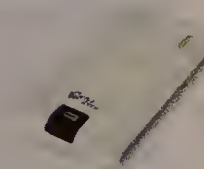
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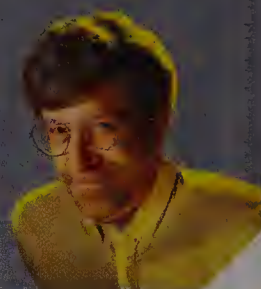


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Technologicolor Dreams for 2005

IF YOU'VE READ THIS ISSUE'S COVER STORY, "Tech 2005: What's New and What's Next" (page 74), you've already gotten a practical guide to the coming year's digital developments. So here at *Full Disclosure*, I'm replacing my customary hard-nosed realism with what businesspeople

call Vision and I call Hyperactive Imagination. What does this column dream about for the coming year? Several things that you aren't likely to see:

Seamless security: Nobody seems to be paying attention to just how vulnerable wireless hotspots really are. Somebody ought to tell the online latte sippers in Starbucks that anything sent without encryption—including e-mail and the passwords to access it—is ripe for plucking by anyone in the neighborhood who has the right software. True, virtual private networks and sites that use SSL from the moment they ask for your password help keep you safe. But in plenty of other places, security relies on the kindness of strangers. It's time for some serious thinking about universal encryption that, like SSL, doesn't get in users' way.

Easy PC switching: I'm due to buy a new computer, but I'll probably run the old one until it crumbles to the floor—largely because of the hassle of getting the new machine to work just like the old one, with files, settings, and programs intact. Wouldn't it be nice if it were easy? In the Mac world, it is. But in the PC world, there's no fool-proof solution, and fiddling with a utility

like Aloha Bob PC Relocator costs extra.

Cheap, ubiquitous, fast wireless data: Alas, the reality is the classic pick-any-two conundrum. Cheap and ubiquitous? Cell phone providers will give you 1XRTT or GPRS data all over the place at a reasonable rate—but none dare call it broadband. Cheap and fast? That's Wi-Fi, but

it's nowhere near everywhere. Eventually existing providers may well make new technologies such as W-CDMA and EvDO broadband (well, sort of broadband) ubiquitous, but I suspect the services won't be cheap for a long while. Could WiMax be the three-in-one technology? Not anytime soon.

All HDTV, all the time: High-definition TV is radically superior to the old-fashioned stuff, but there's simply not enough content. Studios and electronics makers need to settle on one standard for high-def discs. Broadcasters should be going high-def all the way, not just for some shows. The technology is so much better that you

can literally see it. So why is content development so sluggish that even shows broadcast in high-def still have low-def commercials?

Uncanny attention to detail: When I recently tried a few flat-panel PC monitors with high-def TV inputs, all of them stretched HDTV pictures vertically because they couldn't accurately display the 16:9 ratio. Meanwhile, the keyboard of the new little OQO palmtop machine (see page 61) has many gaffes, including a spacebar that doesn't actually work unless you press it right near the middle. Can't designers pay attention to this stuff before we writers crankily point it out?

The sudden and absolute death of spam and spyware: Hey, I did say I was dreaming, didn't I? ■

Visit find.pcworld.com/31595 to see additional columns by Contributing Editor Stephen Manes. He has written about technology for two decades.

If even one of these PC visions comes true, it'll be a great year.

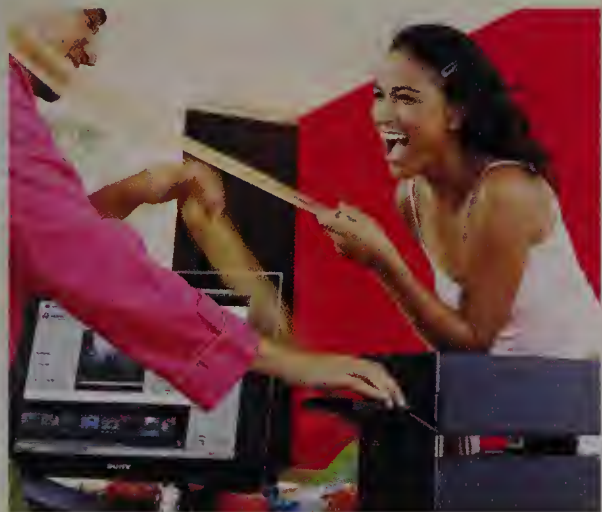


Volume 22, number 12. *PC World*™ (ISSN 0737-8939) is published monthly at \$24.95 for one year (12 issues), \$49.90 for two years (24 issues), \$74.85 for three years (36 issues) by PC World Communications, Inc., 501 Second Street #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$12 per year for Canada; add \$30 per year for airmail for all other countries. Canadian GST Registration #R124669680. Periodicals Postage Paid at San Francisco, California, and at additional mailing offices. Canada Post Publications Mail Agreement #2493993. Returns: 4960-2 Walker Road, Windsor ON N9A 6J3. POSTMASTER: Send address changes to *PC World*, Subscription Dept., P.O. Box 37571, Boone, IA 50037-0571. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/243-0500. Copyright © 2004, PC World Communications, Inc. All rights reserved. The trademark PC World is owned by International Data Group and used under license by PC World Communications, Inc. Technology Advice You Can Trust™, PC World Top 10™, Top 10™, PC World Top 100™, Top 100™, and Consumer Watch™ are trademarks of International Data Group, Inc., and used under license by PC World Communications, Inc. Printed in the United States.

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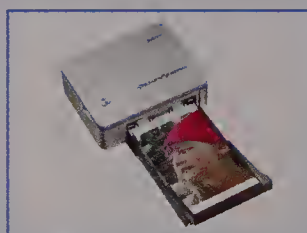


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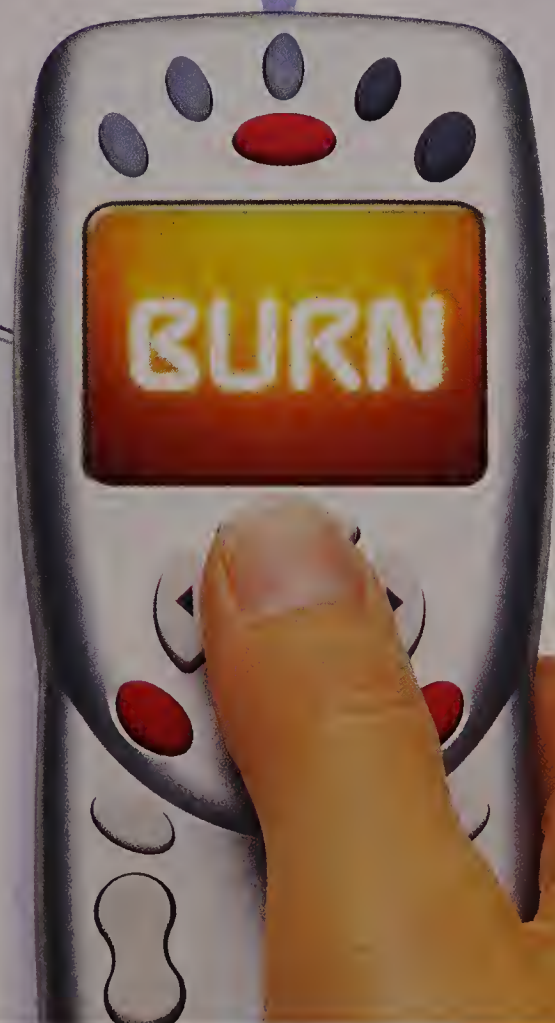
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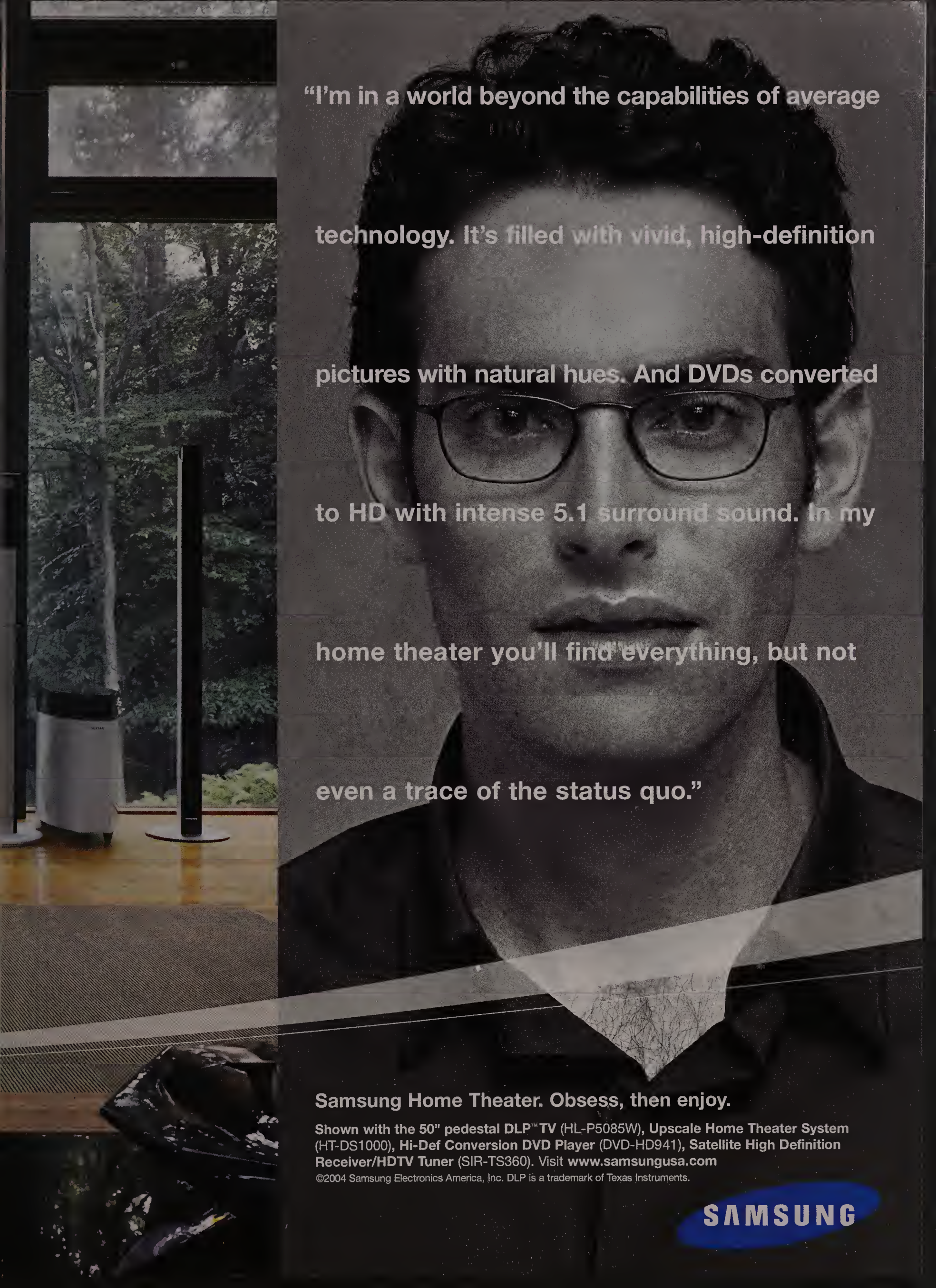


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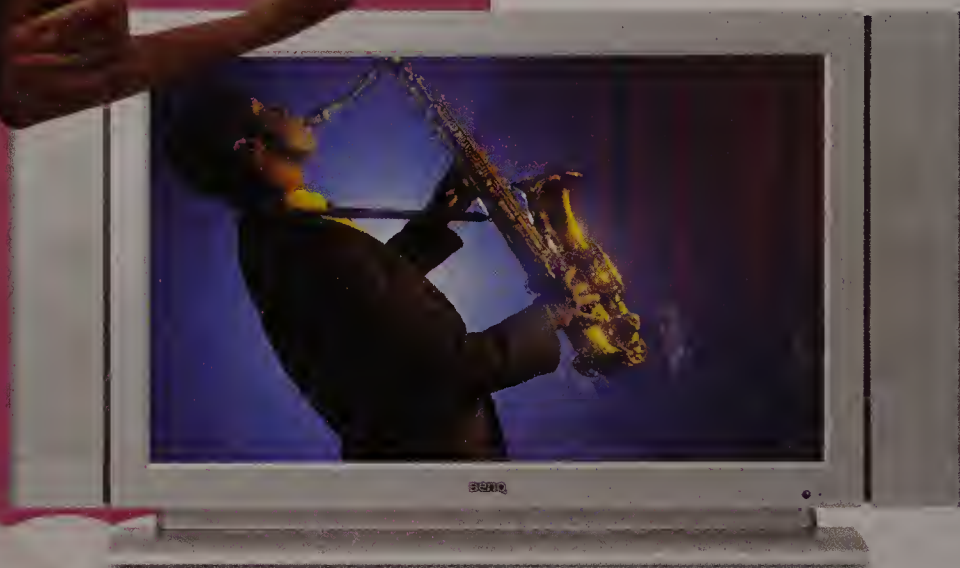


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Enjoyment Matters



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34 Next-Generation DVD

Image quality, versatility, and ease of use make DVD the obvious choice over VHS tape. And new devices are affordable, too. We rate the latest offerings, from living-room recorders to portable players.

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Sugarplums are nice, but when it comes to drafting this year's holiday shopping list, digital goodies are the way to go. Here are 23 treats, from \$6 to \$2700.

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Make video and audio available throughout the house—wirelessly.

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High-res audio CDs and DVDs sound great, but is compatibility an issue?

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Whether you're tooling down the highway or splashing in a pool, let your iPod do the music.

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Roberta's rule of returns: Before you buy anything, make sure you can take it back.

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Yo-ho-ho! Ogo! Digital piracy moves offshore.

"Miming my food requests is more fun than relying on a handheld language translator—though I draw the line at impersonating a free-range chicken."

—GEAR TO GO, PAGE 84

DECEMBER 2004 VOLUME 01 ISSUE 02

Realistic Special Effects

Concert Quality Music

Incredible Gaming Action



NEW!

ButtKicker LFE Kit

**EVERYTHING YOU NEED TO EXPERIENCE
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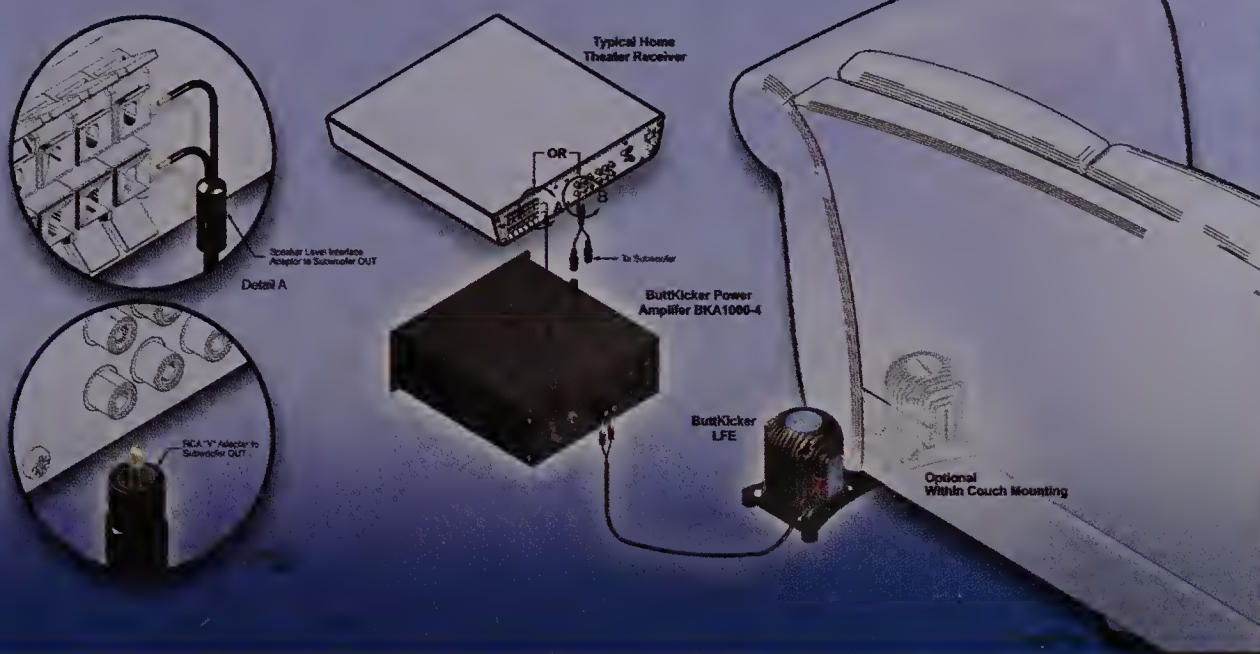
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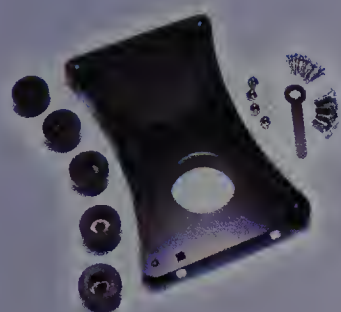


"...all I can say is 'WOW!' Installation was a breeze. Bolted my ButtKicker onto the plate and slid it under the leg of my comfy couch. Took less than 2 minutes."

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ButtKicker LFE Kit
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EVERYTHING YOU NEED TO INSTALL YOUR BUTTKICKER IS INCLUDED

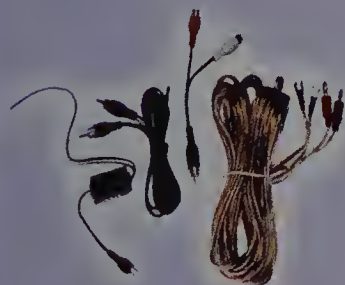
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* Couch Mounting Accessory Kit



* ButtKicker LFE



ButtKicker LFE Cable Kit



* BKA1000-4 Amplifier

Specifications:

ButtKicker LFE

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Frequency Response	5 - 200 Hz
Weight	11 lbs / 5 kgs
Nominal Impedance	4 ohms
Power Handling	400 watts minimum 1500 watts maximum

BKA1000-4 Amplifier

Dimensions	12"W x 12"L x 4"H
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* Also sold separately.

For purchase information, or to learn more about the ButtKicker contact us at 1-888-676-2828 or visit our website at www.thebutt kicker.com/lfe kit.html

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LFE
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Feel what you've been missing

Control-Alt-Delete Horizontally? Microsoft's second pass at Windows in the living room still has PC complexity. BY ALAN STAFFORD

MICROSOFT'S entertainment-oriented operating system, Media Center 2005, is a big improvement over the first version. But people still ask, why the heck would you want a PC next to your TV?

Before I tried it (see the news story in *Seen/Heard/Tried*, page 14), I already had plenty of reasons: In particular, I had heard that it would perform many tasks that I currently need separate devices to perform—and it'd let me browse the Web during commercials (and if I could manage it, during shows, via the picture-in-picture window). The promise was of multimedia multitasking from my favorite position: flat on the couch.

A Media Center PC is unquestionably a powerful component. It can play DVDs like a set-top DVD player; it can time-shift and record television programs like a TiVo or ReplayTV; it can pick up FM radio stations like a stereo receiver; and it can entertain users in many other ways that consumer electronics products can't.

But a Media Center PC still has all the drawbacks of a computer. For example, it will let you choose options that may not work (like trying to record to a DVD+R disc in a DVD-R drive) and then give you more options that may or may not help you figure out how to fix the problem.



EXECUTIVE EDITOR Alan Stafford gets behind a Media Center 2005 system.

And of course, occasionally it won't work at all for some inexplicable reason—such as when it claims to be connected to your wireless network, but applications that rely on it disagree. Even skilled computer users won't want to hassle with nebulous computer-related problems when they have company over for dinner.

Microsoft's stated goals with the latest version of its Media Center operating system are to be "reliable [and] stable, and [to do] what the consumer expects." The new

OS achieves some of those goals: It has more features than the previous version, and many of the new options are easy to use. But Media Center 2005 doesn't fully address its predecessor's biggest hangup: how it behaves when it doesn't work. For example, when I connected the Media Center PC that Microsoft submitted for evaluation to a 50-inch Optoma DLP television, the PC didn't recognize the TV. The fix wasn't terribly complicated, but I had to call Microsoft for help figuring it out.

The situation isn't entirely Microsoft's fault. Many consumer electronics companies either don't get the plug-and-play concept or refuse to go along with it. At the recent CEDIA trade show, the scuttlebutt was that consumer electronics vendors didn't want their products to work with PCs because they were afraid that Microsoft and other IT vendors would woo their customers and erode their profit margins. That's going to happen whether they like it or not; poor interoperability will only slow the process (and tick off people like me when they find out who's responsible).

But after all these years, the computer industry still seems to make many products for dedicated PC hobbyists and for companies with IS staffs: If something doesn't work, do this, this, and this; if those steps don't fix the problem, replace the part, because it's so cheap. But why should you have to go through that kind of song-and-dance with products that are supposed to be entertaining you? ■

Alan Stafford, executive editor of Digital World, prefers the sofa to his desk job.

THIS DIGITAL WORLD: THE INSIDER BEHIND SEEN/HEARD/TRIED



ONE OF THE LIKELIEST PEOPLE on the planet to know about new consumer electronics products before they hit the shelves is Cathy Lu, contributing news editor for *Digital World*. Cathy manages *Digital World's Seen/Heard/Tried* section, which requires her to sniff out new products and assign them for review.

Cathy also puts her nose for news to work writing "Digital World Insider," our free monthly e-mail newsletter covering consumer electronics—HDTV, DVD, and everything in between. For the scoop on new and nifty upcoming stuff, subscribe to the newsletter at dwfind.com/44832.

OptomaHDTV



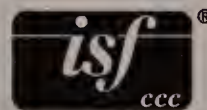
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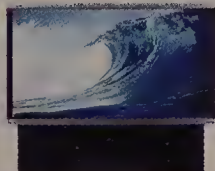
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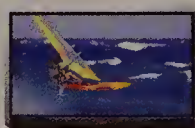
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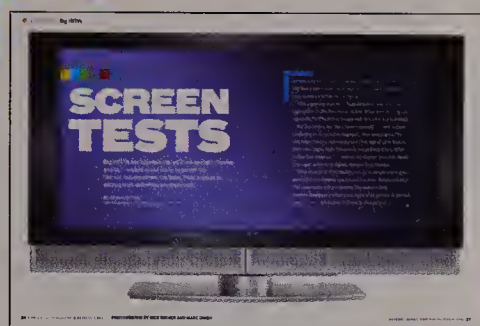
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 published by PC World
 Communications, Inc.

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HDTV SHOPPING TIPS

WHEN I WENT shopping for a high-definition television, I looked for a big-screen plasma model. I learned two things that you failed to mention in your "Screen Tests" article [October].

First, plasma screens will eventually develop tiny dots that will never go away. Second, plasma screens don't show black shades, such as a black suit or a black car, as true black. They appear as more of a gray color.

I also considered purchasing an LCD HDTV screen, but I ended up buying a Samsung Digital Light Projection 61-inch model. DLP is the only way to go, in my opinion. The TV is only about 16 inches deep, and it's so lightweight that I can move it myself.

Anthony Toliver
 Snohomish, Washington

Editor's response: A plasma screen's ability to display black shades varies: In our experience, inexpensive plasma televisions don't do a particularly good job of reproducing true black, but the high-quality ones handle black colors very satisfactorily. Check out the *Seen/Heard/Tried* section on page 12 for our review of the latest 50-inch Samsung DLP set, the HLP5063W.

A LOSSY SHAME

I LIKED YOUR FIRST ISSUE, apart from the flawed section titled "The Audiophile Challenge" ["Digital Music Here, There, Everywhere," October].

The intent seems to have been to test how well-compressed music sounds versus the original CD. The test was obviously flawed since FLAC will exactly reproduce the sound it is given. If the testers can hear a difference between the CD and a FLAC copy then the testers are either hearing flaws introduced during ripping of the CD (before conversion into FLAC) or they are hearing differences in how the PC and sound card played the FLAC versus how they played the CD.

The explanation of lossy/lossless was great. But it's a shame that someone in the test setup dropped the ball. While there might be value in saying that it was a real-world test of PC versus hi-fi, I think it left the impression that the format was at fault rather than the PC.

Mark Ager, via the Internet

Editor's response: We played the CDs on a CEC TL1 CD transport connected to a Chord DAC64 digital-to-analog converter; we played the FLAC and other encoded versions from a PC with an external SoundBlaster Audigy 2 sound card. Both sources were routed through the same preamplifier, amplifier, and speakers. We chose this setup because it reflected a likely scenario for how people will use the different formats.

In many cases FLAC was nearly indistinguishable from the CD—despite disadvantages in the encoding process and in the playback gear. That was impressive.

CORRECTION

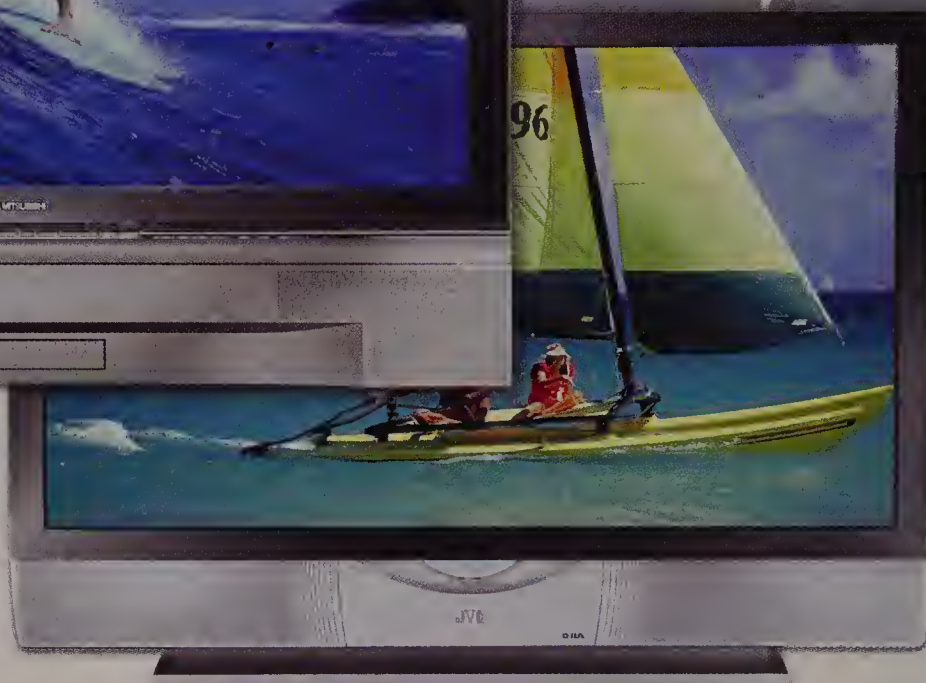
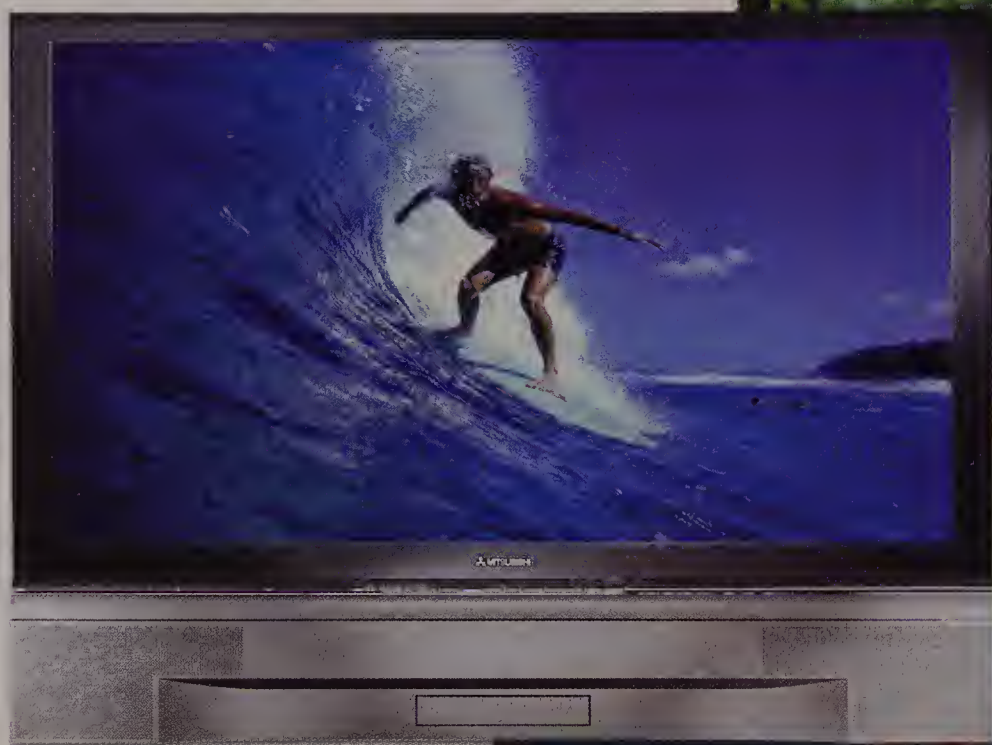
IN OCTOBER's *Seen/Heard/Tried* section we should have spelled the name of Hewlett-Packard's new IPaq handheld as the Pocket PC H6315. ■

HOW TO CONTACT US

Digital World welcomes letters to the editor. We reserve the right to edit for length and clarity. Send e-mail to letters@digital-world.com

Seen / Heard / Tried

Rear-Projection TVs Step Up



BIG-SCREEN

WONDERS: Clockwise from left, Mitsubishi's WD-52525, Samsung's HL-P5063W, and JVC's HD-52Z575.



HEATING UP the big-screen HDTV scene this holiday season is a bevy of new rear-projection sets based on one or another microdisplay technology such as DLP (Digital Light Processing) or LCoS (liquid crystal on silicon). We lab-tested three new models—JVC's \$3255 **HD-52Z575**, NEC-Mitsubishi's \$3700 **WD-52525** (both 52-inch sets), and Samsung's \$3499 **HL-P5063W** (a 50-inch model)—and found a lot to be pleased about.

All three sets approached or outperformed Optoma's OptomaTV RD50, which received our DW Choice award for rear-projection sets in last issue's 50- and 52-inch HDTV roundup (see dwfind.com/44862). After our latest round of tests, Samsung's HD-ready HL-P5063W holds the DW Choice

for its combination of superb image quality, rich features, and generous tech support.

MICROMANAGED DISPLAYS

WHILE NONE OF these sets has the cachet of a skinny hang-it-on-the-wall plasma display, all measure less than 18

inches deep (at 14.5 inches, the Samsung is the slimmest). The Mitsubishi and Samsung are based on DLP technology; the JVC is among the first

sets to use JVC's proprietary D-ILA (Direct Drive Image Light Amplifier), which is an implementation of LCoS.

Our judges gave the JVC HD-52Z575 top marks for its color reproduction. Skin tones looked natural, and other hues appeared rich and vivid without seeming artificial. But no

BEST-SELLING TV TYPE: FLAT-PANEL LCDs. —AMAZON.COM UNIT SALES



THE REASONS BEHIND THE RATINGS The Test Center logo indicates lab-tested products; our five-point star rating system reduces an evaluation to a single overall assessment.

★★★★★ Practically perfect
★★★★☆ Pretty darn good
★★★☆☆ Okay, but just okay
★★☆☆☆ Not so hot
★☆☆☆☆ Just plain awful



The DW Choice award indicates our pick of the best product in a comparative review, regardless of price, based on multiple evaluative criteria.



The DW Value award honors a product in a comparative review that we deem an excellent value for the price. When price is an object, look for this logo.

matter how we tweaked the controls, the JVC struggled with contrast: Details in dark and shadowy content, such as our HD clip from *Joan of Arcadia*, seemed to melt together. This, along with a complicated remote and on-screen menu system, dragged the JVC down in our overall rankings.

SAMSUNG SCORES

AFTER WE performed our baseline calibration (see dwfind.com/44866), colors on the Samsung appeared a bit washed out. But it climbed to the top with its terrific handling of detail, brightness, and contrast; its performance in bright-room light; and its rendering of HD and DVD content. It also has an attractive

design; an above-average sound system (it's the only set here with 15-watt-per-channel audio); and easy-to-navigate on-screen menus and remote control. Around-the-clock tech support was icing on the cake.

NEC-Mitsubishi's WD-52525 didn't score as well as the others (or the reference

Optoma) in most performance tests: Colors—especially reds—generally looked oversaturated, which made for ruddy skin tones. And the DiamondShield protective screen, which is intended to enhance contrast and brilliance, produced annoying

reflections in both standard and bright-light environments (you can remove this screen, however).

The WD-52525 did handle standard-definition content well, and it delivered the best collection of features, including a CableCard slot for digital cable without a set-top box, a built-in ATSC-compliant tuner for over-the-air DTV (a \$300 value), FireWire ports, and slots for several popular flash media formats.

If you're willing to pay extra for a set that can snag HD broadcasts from digital cable or over the air without requiring a set-top box, the WD-52525 is worth considering. But if you're going to use a cable or satellite box (see dwfind.com/44864 for why you might have to), consider the Samsung. It's the best rear-projection TV we've seen to date. —Yardena Arar

DAVE MIRRA'S SIDEKICK

DAVE MIRRA is to BMX riding what Tony Hawk is to skateboarding. An X Games athlete with two videogames that carry his name, the superstar bike-stunt rider likes his techie gadgets.

Favorite versatile gadget: "I love the T-Mobile Sidekick II for the camera and for the all-in-one planner."

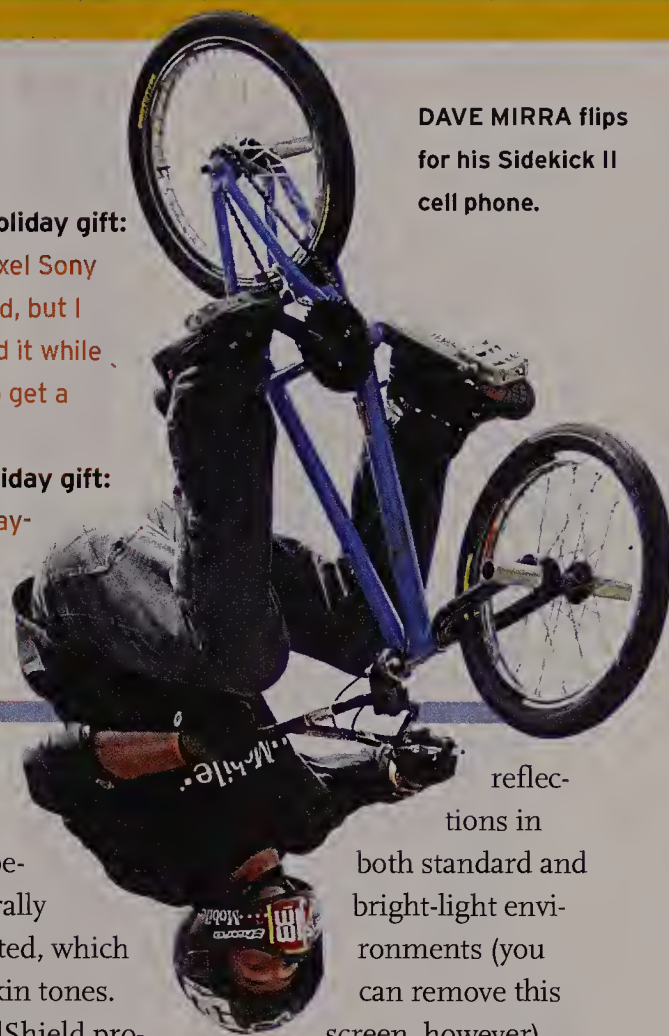
Most-preferred holiday gift:

"I had a 5-megapixel Sony camera that I loved, but I recently misplaced it while on a trip. I hope to get a replacement."

Least-desired holiday gift:

"An eight-track player. No use for it."

—Narasu Rebbapragada



DAVE MIRRA flips for his Sidekick II cell phone.



TEST REPORT: SAMSUNG TOPS THE HEAP

Our tests of microdisplay HDTVs show that the Samsung has an advantage in high-def images.

	PRODUCT	FORMAT SCORES			Features	DW verdict
		HDTV	Standard-definition TV	DVD		
1	Samsung HL-P5063W ★★★★★ \$3499 dwfind.com/44638	Very Good	Good	Very Good	Very Good	Sleek design, and strong image and sound quality make for a honey of an HD-ready DLP set.
2	Mitsubishi WD-52525 ★★★★☆ \$3700 dwfind.com/44640	Good	Very Good	Good	Outstanding	A worthy choice if you want a CableCard-ready DLP model; has more ports than most.
3	JVC HD-52Z575 ★★★★☆ \$3255 dwfind.com/44642	Good	Very Good	Very Good	Good	Colors are beautiful and smooth; but poor contrast is this LCoS set's Achilles' heel.
REFERENCE	Optoma OptomaTV RD50 ★★★★☆ \$3200 dwfind.com/43796	Very Good	Good	Very Good	Very Good	The DW Choice winner last issue holds up well against this month's new models.

CHART NOTES: Products (other than the reference Optoma OptomaTV RD50) are listed in order by star rating, which considers image quality, features, usability, and support. See dwfind.com/44644 for information on how we test HDTVs.

Media Center Gets a Makeover

HAVING MASTERED the home office, Microsoft is stepping up its efforts to take over the living room—and every other room—in your house. The company's **Windows XP Media Center 2005** operating system, which will come preinstalled on Media Center PCs from companies like Dell, Sony, and HP, acts as a media server that can feed audio and video to any receiving device within network range. But don't trash your TiVo just yet.

The new operating system lays a slightly tweaked version of the original Media Center interface on top of Windows XP Service Pack 2 underpinnings. PCs running it will begin shipping before the holidays. But is Media Center 2005 ready for your living room? To find out, I took a prerelease version out for a spin.

Microsoft says that only 21 percent of previous Media Center-equipped PCs owners used them in the living room. But PCs with the new operating system will be capable of playing, recording, and redistributing multiple video and audio streams over a

wired or wireless network to any PC or TV in the house (see sidebar).

The Media Center PC that I looked at had a single PCI card with dual analog TV tuners. Others, however, will be able to hold two tuner cards—one for analog TV and another for HDTV. With either type of tuner, you can watch, pause, and record live TV shows (using an integrated, online-updated program guide), and you can record two shows simultaneously.

If you can get HDTV content into the box, Media Center 2005 lets you burn it to DVD with a simple right-click command, which last year's OS didn't permit. The new

version even supports dual-layer DVD recording, although it won't span discs.

Microsoft admits that the video quality generated by last year's Media Center PCs was not so hot. But this generation of models, it says, will have comb filters in their TV tuner cards, which will help smooth

out standard-definition signals; in addition, tuner cards will compress live TV signals at a 9-mbps variable bit rate, up from the fixed 6-mbps rate in last year's models. To my eyes, standard-definition video still didn't look great on either my HDTV or my PC monitor, though that's not unusual for standard-definition content.

MEDIA CENTER FOR THE MASSES?

MEDIA CENTER is still a computer operating system, so it takes a while to boot up. Although its interface is prettier and easier to use than its predecessor's, you have to resort to Windows occasionally. A Media Center PC running the OS doesn't work as well as many of the consumer electronics devices that it might replace, but it combines many of those devices' functions in one box and gives you the power of a computer, to boot.

—Alan Stafford

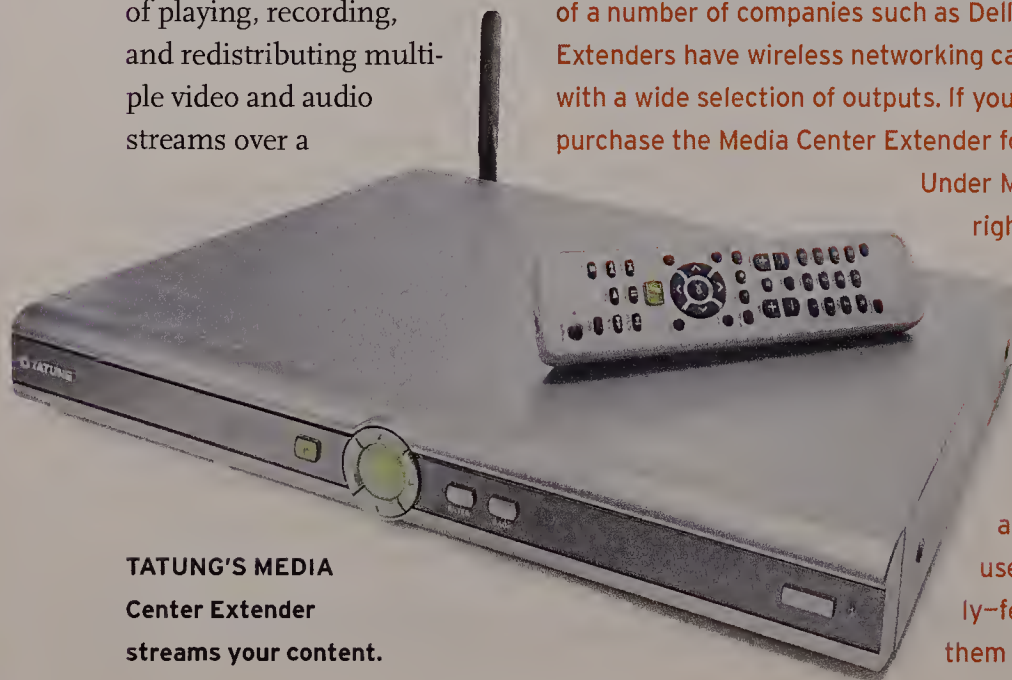


PART TV, part computer:
Media Center does it all.

EXTEND YOUR REACH

WANT TO WATCH Media Center content on your bedroom TV? For about \$300, you can buy a Media Center Extender from any of a number of companies such as Dell, HP, Linksys, and Tatum. Extenders have wireless networking capabilities, and they come with a wide selection of outputs. If you own an Xbox, you can purchase the Media Center Extender for Xbox for \$80.

Under Microsoft's revised digital rights management implementation, you can access even copy-protected audio and video. An 802.11a or 802.11g network has enough bandwidth to allow up to five devices to use Extender simultaneously—fewer if one or more of them are receiving video.



TATUNG'S MEDIA
Center Extender
streams your content.

Audio to Play By

WITH KENWOOD's gaming home theater system, everything is taken care of for you. But just because you get a whole entertainment system in one box doesn't mean you sacrifice quality.

The **HTB-S715DV Fineline Gaming Home Theater System** comes with a 6.1-channel surround-sound receiver (complete with Dolby Digital EX and DTS-ES 96/24 decoding), a DVD player, and seven speakers. Setting up the system took me a mere 20 minutes, thanks in part to color-coded speaker wires.

The thing that distinguishes the HTB-S715DV from other home theater systems is its gaming features. The front of the receiver holds a useful set of video and audio inputs for a PlayStation 2 or other game console (including one optical input for digital audio); and when you start up a game, the system automatically sets your preferred surround-sound mode. You don't even have to hog the stereo while getting your Grand Theft Auto fix: A

dual-source mode lets you play games with headphones on while others listen to music through the speakers.

The speaker system delivered warm, clear, balanced sound throughout my living room, and the DVD player's picture quality was excellent. The DVD player supports progressive-scan playback; has composite, S-Video, and component outputs; and is compatible with numerous formats: DVD-Video, DVD±R/RW, VCD, CD-R/RW, and MP3/WMA-encoded discs.

Though you *can* find cheaper theater-in-a-box systems, you'd be hard-pressed to find a better one than the HTB-S715DV. —Dave Hamilton

HOME THEATER SYSTEM

Kenwood HTB-S715DV Fineline Gaming Home Theater System

★★★★★

DW VERDICT: Sounds great, and it's useful for gamers.

PRICE: \$700

dwfind.com/44784



KENWOOD'S home theater system is a great addition to your living room.

IN THE PIPELINE PRODUCT NEWS



HIGH-DEF DVD-AUDIO PLAYER

Yamaha's \$799 DVD-S2500 features a 216-MHz/12-bit digital-to-analog video converter and a FireWire port. This device is rare in its ability to pipe DVD-A and SACD audio via FireWire. Expected in January.

dwfind.com/44788



TV ANYWHERE

Belkin's PureAV RemoteTV (\$500) lets you stream Scrubs from the TiVo in your den to the TV in your bedroom. The transmitter sends audio and video from a cable box, DVD player, or other component to a receiver that you hook up to a TV in another room in your house.

dwfind.com/44794



SMALL WONDER

Sony's 5.1-megapixel Cyber-shot DSC-M1 (\$600)

digital camera can record VGA-resolution video to Memory Stick Pro Duo cards. It also has the interesting ability to record video for 5 seconds before and 3 seconds after you snap a still. Due by the time you read this.

dwfind.com/44796

LCoS Shows High-Def Promise

YOU'VE GOT YOUR eye on a 50-inch flat-panel TV—sleek, silver, shiny. Yet the price sends you running for cover.

Liquid crystal on silicon (LCoS) technology may offer a way to avoid big-screen sticker shock. Manufacturers are deploying LCoS chips in several new HDTV sets, including models from JVC (see review, page 12), Mitsubishi, Sony, and Syntax. New sets mean more competition for the flat-panel market—and relief for your pocketbook.

LCOS LIGHT BRIGADE

LCOS CHIPS use a hybrid of two technologies: liquid crystal display (LCD) and digital light projection (DLP). Light is shined through a thin liquid crystal layer onto micromirrors that make up the LCoS chip, creating the on-screen image. According to LCoS proponents, the pixel structure of an image is often less visible than on an LCD or DLP set, even with your nose pressed to

the screen, thanks to minimal space between micromirrors.

"The picture quality can be very impressive," says Andrew Shulklapper, DisplaySearch's vice president of TV market research.

"And it holds the potential to become a lower-cost option than DLP or LCD rear projection."

The reason? The Intel factor.

At last January's Consumer Electronics Show, Intel said that it would begin manufacturing LCoS chip sets this year and hoped to cut the cost of big-screen HDTVs to less than \$2000 by 2005. Unfortunately, there have been problems. In August Intel announced that it was delaying production until 2005 in order to "differentiate its offering from competitors" as well as to make unspecified improvements, according to an Intel spokesperson. Those improvements are likely to include a jump in resolution,

from the current 1280 by 720 to 1920 by 1080.

Manufacturer Brillian has encountered difficulties, too. It had planned to stock its Gen II LCoS-based TVs in Sears stores nationwide; in September, Sears canceled the deal after Brillian announced a disruption in HDTV shipments.

Despite the hiccups, LCoS will make the projection TV market very competitive when

it arrives in full force, says Bob O'Donnell, director of personal technology for research firm International Data Corporation. Adds Shulklapper: "If Intel is successful, then the price [of 1080p LCoS] should be lower than 1080p DLP, but perhaps higher or equal to 720p DLP." Still, he doesn't anticipate that happening until 2006.

—Susan Ashworth

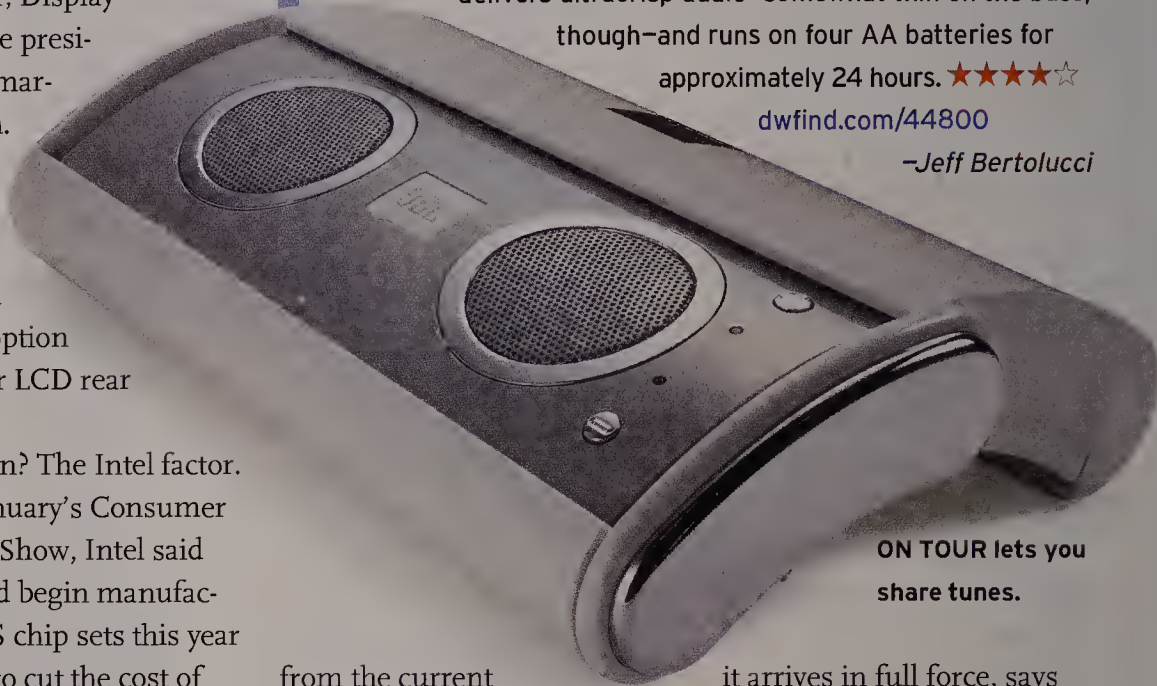
MUSIC TO YOUR EARS

MY LAPTOP SPEAKERS have the audio quality of a transistor radio circa 1965. JBL's \$100 **On Tour**, a portable speaker that resembles an oversize eyeglasses case, can plug into a laptop or replace your portable audio player's headphones. The lid of the On Tour slides open to reveal two stereo speakers. The unit

delivers ultracrisp audio—somewhat thin on the bass, though—and runs on four AA batteries for approximately 24 hours. ★★★★★

dwfind.com/44800

—Jeff Bertolucci



ON TOUR lets you share tunes.



THEN AND NOW CELL PHONES

THEN: Motorola DynaTAC 8000x (aka The Brick)

Released in 1983 ♦ 1 hour of talk time and 8 hours of standby ♦ Red LED display and memory for 30 numbers ♦ 28 ounces ♦ 13 inches long ♦ \$3995

NOW: Nokia 9300 ♦ Due in early 2005 ♦ 4 hours of talk time and 200 hours of standby ♦ 80MB built-in memory (expandable with a MultiMediaCard) ♦ QWERTY keyboard, joystick, and Bluetooth ♦ 5.9 ounces ♦ 5.2 inches long ♦ \$850 (estimated) dwfind.com/44798

—Narasu Rebbapragada



SHURE E SERIES EARPHONES. LIGHTER THAN A LEAD GUITARIST.

Eye-popping audio wherever you go. That's the E Series. For nearly 80 years, professional musicians have trusted Shure – in studio, on stage, and now on the go. Super light and sound isolating, the E Series lets you hear music the way music was meant to be heard – crisp, clear, and uncompromised. The E Series. Perfect for MP3, CD, and DVD players. Available at shure.com.



SHURE
It's Your Sound®

Kick-Butt Personal Trainer



MP3RUN makes running a joy.

MP3 PLAYER

Nike-Philips MP3Run PSA260

★★★★☆

DW VERDICT: If you're a runner, you want this.

PRICE: \$300

dwfind.com/44802

GETTING READY for a run can be like packing for a trip. Keys? Check. ID? Check. Tunes? Check. Pedometer? Forget it.

The **MP3Run PSA260** digital audio player helps shorten the checklist by including a geeka-

licious accessory: a cigarette-lighter-size wireless speed-and-distance monitor that clips to your shoelaces.

The monitor registers your foot strikes as you jog along and continually transmits data to the player on how fast you are going and how far you've gone. While running, you hear progress reports through the player's headphones. You can choose to receive voice feedback every mile, every 5 minutes, or on demand.

The MP3 player and the speed-and-distance monitor communicate through Bluetooth; and though the player is designed to be worn on the included armband, the setup worked just as well when the player was sequestered in a fanny pack.

The player has 256MB of memory and a rechargeable battery that lasted about 8 hours on a charge. It comes with a power adapter and can charge via a USB 1.1 port. You can upload workout data to your computer and save it to the included Digital Media Manager software.

Though I loved this gadget instantly, I would have liked louder voice feedback. Furthermore, the earbuds didn't feel comfortable or secure in my ears, and their sound was not as good as that from my favorite set of Sony sport headphones. But all quibbles aside, this gadget is a kick in the pants for any runner.

—Rebecca Freed

XBOX FREEDOM

XBOX LIVE GAMERS know how irritating wearing a headset can get. Nyko's \$25 **SpeakerCom** fixes that by piggybacking onto the Xbox Live adapter (which allows you to play games online) and replacing the telemarketing-esque headset with a speakerphone. Besides the joy of being freed from constraining wires, I found the voice pickup and broadcast sound quality surprisingly clean. Squeezing the push-to-talk button felt a bit clumsy, though, with everything hanging bulkily from the Xbox controller.

★★★★☆ dwfind.com/44804

—Cathy Lu



GADGET COUTURE



Artful Xbox

ColorWare gives your Xbox some pizzazz for \$99. Choose from 24 shades. dwfind.com/44818



Stylish Sleeves

Bleibtreu safely houses your PDA for less than \$50. dwfind.com/44822



Jeweled Mobility

NYC Peach adorns your Motorola or Sidekick phone with Oscar-night sparkle. dwfind.com/44816



Fashionable Cases

Coach's embossed PDA case (\$68) takes you from day to evening, without missing a beat. dwfind.com/44814

Sculpted by Samsung.



Introducing the pedestal DLP™ TV that truly stands alone. Designed to make a bold statement in any room, it uses our Cinema Smooth Light Engine™ to deliver ultra-sharp, high definition images that hover beautifully above an integrated pedestal base. So, wherever you decide to place it, it's sure to offer an experience as original as the thinking that inspired it. www.samsungusa.com/dlp

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Tweeter
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ABC Warehouse

Abt

HARVEY

Pleasing People... Since 1936

SAMSUNG

Water World Photography

WHY LIMIT your photography to terra firma? Whether your taste runs to still or video, there's a good chance of finding an underwater housing for your camera. I tested the \$299 **Olympus PT-020** housing with my Olympus C-5060 (for which it's intended), and the \$1699 **Top Dawg System II** (made for consumer camcorders) with a Sony TVR-22.

I put both housings to the test in the murky waters off Monterey, California and had the most success with video. The Top Dawg II—a beautifully constructed aluminum



PT-020 with SEA and Sea flash.

case—is simple to use, with controls that gloved fingers can easily reach while holding the housing's two grips. Two optional high-intensity lights on fully articulating,

foot-long stalks allowed me to position the lighting exactly where I wanted it. Backscatter, which distributes the Top Dawg II, also provided me with an optional 2.5-inch LCD that works in place of Sony's viewfinder. It's a \$499 extra, but it makes viewing subjects much easier.

Inexpensive and light, the polycarbonate Olympus housing fit the C-5060 neatly. I successfully worked the camera's many control buttons underwater, though doing so wasn't always easy with my thick neoprene gloves on. Getting good shots proved difficult—not because of the housing, but because of the camera's shutter delay. A bugaboo on land, the delay can drive you crazy underwater, where weightlessness makes staying in one place difficult.

A couple of recommendations: Buy a more powerful external flash (they sell for roughly \$350 to \$550), and invest in a good flash-bracket system (available for about \$200). (Ultralight Control Systems, dwfind.com/44868, sells a good one.) —Tracey Capen



TOP DAWG gets our vote. It uses a camcorder's LANC port to issue commands.

UNDERWATER CAMERA HOUSINGS

Olympus PT-020

★★★★☆

DW VERDICT: Fine for light duty, but key extras triple the price.

PRICE: \$299, housing only

dwfind.com/44632

Top Dawg System II

★★★★★

DW VERDICT: Don't get wet without it.

PRICE: \$1699

dwfind.com/44634

GO ABROAD FOR CHEAP TUNES?

IF THE RESTRICTIONS imposed by U.S.-based online music stores frustrate you, you may want to tap into the global market. But download at your own risk.

Sites such as Russia's **AllofMP3.com** and Spain's **Weblisten.com** are alluring because of low prices and the lack of restrictions on copying the music you buy. AllofMP3 sells tunes for 1 cent to 2 cents per megabyte (a 5-minute MP3 encoded at 384 kbps costs about 15 cents). Weblisten has an \$11 subscription plan that gives you 8 hours of downloads, among other pricing schemes.

Both sites claim that they're legit. But according to Francine Cunningham, spokesperson for the IFPI (the recording industry's international rights enforcement organization), they are distributing music without having received proper authorization from her organization's members.

Nevertheless, the IFPI has been unable to quash the sites, and this makes some music lovers happy. "I'm



GLOBAL sites offer cheap music but questionable legal issues.

kind of a cheap-skate," says one All-ofMP3 user, "and

the price that they charge is about what I'm comfortable with."

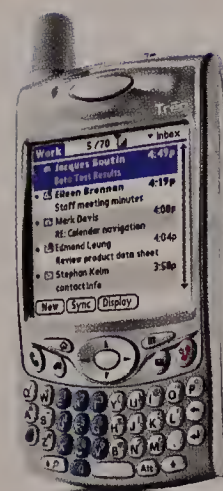
But bargain hunters should beware, warns attorney Tom Lewry. "My advice would be stay away from them because you run the risk of being sued." —John P. Mello Jr.

Replies to emails, returns call to
office and checks game score.

Moves laptop from one
shoulder to other.



Don't just stand there.



No connection? No outlet? Nowhere to sit? No problem. At least not if you have a Treo™ smartphone by palmOne. It's the complete solution for wireless messaging, offering powerful email capabilities, text messaging, and a full-featured phone.* It also boasts a web browser, a Palm Powered™ organizer, a built-in QWERTY keyboard and a lot more. And it all slips into your pocket so you can enjoy the convenience of a laptop, without the inconvenience of a laptop. Find out more at SeeTreo.com.

palmOne

Email. Phone. Organizer. **Treo™**

*Wireless service plan required. Email and web require wireless data services and ISP, and additional charges apply. Wireless coverage may not be available in all areas. Screen image simulated. ©2004 palmOne, Inc. All rights reserved. palmOne, Treo and Palm Powered are among the trademarks or registered trademarks owned by or licensed to palmOne, Inc. All other brand and product names are or may be trademarks of and are used to identify products or services of, their respective owners.

Taking Sports Sirius-ly

SATELLITE RADIO

Sirius Sportster

★★★★☆

DW VERDICT: Sports-oriented satellite radio with a few quirks.

PRICE: \$100 (receiver only)

dwfind.com/44806



AS A FOOTBALL FANATIC, I got a kick out of using the **Sirius Sportster**, a portable satellite radio aimed at NFL nuts.

A subscription to the Sirius service (\$13 a month) includes NFL Radio, which provides live broadcasts of all of the league's games along with several daily sports shows. In addition, the Sportster has some nice touches for zealots; for instance, you can set it to flash the logo of your favorite pro team when you turn the unit on. The radio will even flash up-to-the-minute sports scores on

THE SPORTSTER
is your ticket to
football heaven.

its display while you listen to The Sports Zone, one of several themed areas.

The Sportster receiver drops into one of three hosts: a \$50 base station for listening at home; a docking station (\$50) for use in a car; or a boombox-style portable stereo (\$100).

The Sportster is not without its quirks. Positioning the antenna for the home base station that I tested was tricky: I had to place the antenna outdoors, away from any eaves or overhead obstructions. The small, sleek Sportster generates a surprising amount of heat, too, so you may not want to keep it enclosed in a home-theater cabinet or any other cramped quarters for very long.

—Ed Driscoll



GET XM

DON'T SETTLE for bad local morning talk radio. Delphi's \$130 **Roady2** is a solid XM satellite radio receiver (XM radio is \$10 a month). Using the wireless FM modulator, which rebroadcasts the XM signal to one of 12 radio frequencies, I got decent reception while driving my Honda CRV around Seattle. I liked the ability to scroll stock quotes across the display, but in my view the interface was only so-so. ★★★★★

dwfind.com/44808 —Cathy Lu

Bose's Pricy iPod Speaker Dock

BOSE'S NEW **SoundDock** digital music system works with your third- or fourth-generation Apple iPod (or iPod Mini) music player, simultaneously charging it and blaring your tunes to the world. The sleek, shoebox-size device produces solid sound, but at \$299 it's rather pricey.

The SoundDock unit itself has a mere two buttons (for up and down volume), but Bose includes a credit-card-size remote to control volume,

select tracks, play or pause songs, and turn the power on or off. To dig deeper, you have to manipulate the iPod itself.

Once I plugged my iPod into the SoundDock, I found the audio quality good and the volume plentiful. I did find, however, that the unit's small size precluded it from achieving any significant stereo separation.

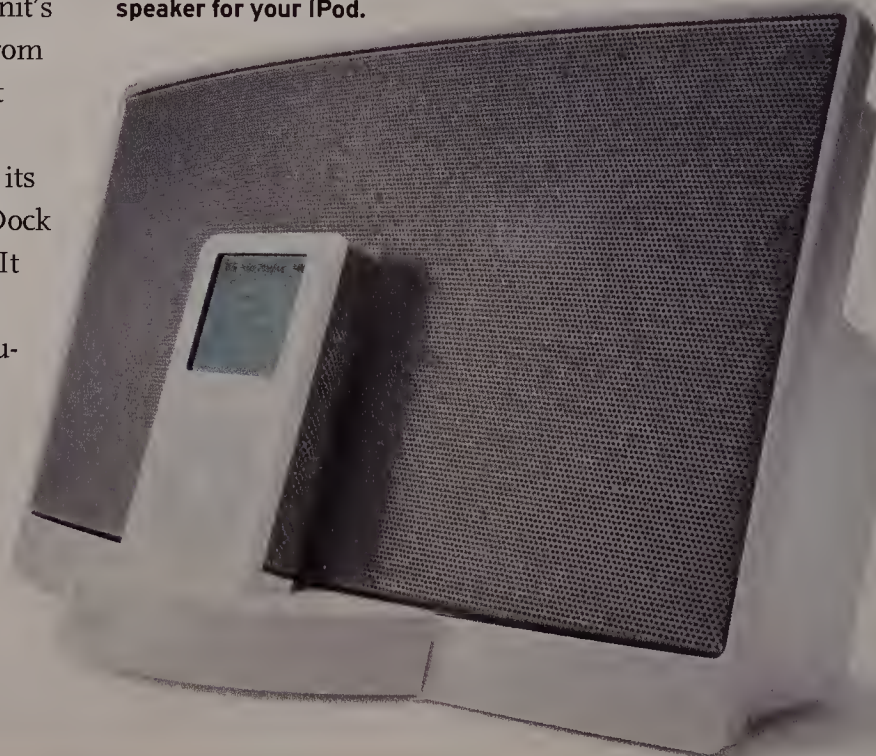
Unfortunately, despite its modest size, the SoundDock isn't especially portable: It doesn't run off batteries, and it doesn't feel particularly durable (tug downward on the front section, for instance, and you'll see internal wiring peeking out).

If you're looking to

turn your iPod into a modern-day boombox, consider Altec Lansing's more portable InMotion or IM3, which costs much less and also lets you sync your iPod with your com-

puter (see *Gear to Go*, page 83). But if you can swallow the price, the SoundDock may be the way to add music to a bedroom or other space using your iPod. —Tom Mainelli

BOSE OFFERS a grand
speaker for your iPod.



IPOD SPEAKERS

Bose SoundDock

★★★★☆

DW VERDICT: Sleek, but pricey and not portable.

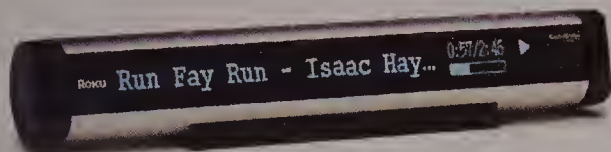
PRICE: \$299

dwfind.com/44542



ROKU™

PERFECTING THE ART OF DIGITAL MEDIA.



Roku SoundBridge Network Music Player



Roku HD1000 High-Definition Digital Media Player

Roku proudly introduces two network-ready media players that set new standards in digital home entertainment.

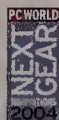
The Roku SoundBridge Network Music Player plays your PC or Mac music files anywhere in the house. SoundBridge's super-bright display, sleek aluminum casing, built-in Wi-Fi™, and iTunes® and Windows® Media Connect compatibility (along with support for all major music formats) make it a winning part of any home AV system.

The Roku HD1000 high-definition digital media player brings your high-def TV to life with digital photos, classic art and LiveArt™, your entire music library — even video you've saved to your computer. Just pop in a digital memory card, or easily connect with your PC or Mac.

Enhance your
entertainment experience

with a PC featuring

intel.com/go/digitalhome



For information and special offers, visit
www.rokulabs.com/dw

Roku and Intel are working together to enhance your home entertainment experience.

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Camera Phones Grow Up

CELL PHONE makers are fattening up camera phones with higher-resolution cameras, bigger screens, and flashier but larger cases. Two prime examples are the \$250 **Motorola V710** from Verizon Wireless and the \$250 **Samsung MM-A700** from Sprint PCS.

The V710 captures photos at a maximum resolution of 1280 by 960, while the MM-A700 pulls in about 20 percent fewer pixels at 1152 by 864. The two phones offer similar photographic features, including a flash and options for adjusting white balance, contrast, and image style (such as color, black-and-white, and antique). Both models also capture 15-second video clips.

The Samsung MM-A700 generated better, brighter, and smoother images overall in my test shots. Both phones produced pictures with slightly dull colors, but the Motorola pics looked blotchier and had more color noise. A few hassles: Storing or erasing the relatively large images can take several seconds. Both phones' displays take a few seconds to adjust to the lighting conditions. And while both screens exhibit a slightly grainy texture, the V710's LCD looks darker. When I increased its brightness, the display looked even grittier.

Both clamshells feature 2-inch-diagonal color screens (2.2 inches on the Motorola, to be persnickety), along with easy-to-access vol-

ume controls and camera buttons on the sides. Both phones are larger than average, though the MM-A700 is a smidgen shorter and lighter than the V710.

Through a downloadable app called MobiTV, you can get choppy TV (including CNN and Fox Sports) at up to 15 frames per second on the MM-A700 (for \$25 a month). The Samsung also has an airplane mode that lets you do activities unrelated to phone calling (such as playing games) in-flight. The V710 supports Bluetooth (for headset use only; not for file transfer) and is the first cell phone I have seen that can accept TransFlash memory cards (though it doesn't come with any).

Despite the phones' similarity, I'd pick the Samsung MM-A700 for its brighter screen, better picture quality, and airplane mode. —Grace Aquino



TiVo Hits a PC Near You

IF YOU'RE like me, you spend far more time staring at your PC than at your TV anyway. So why not go whole hog and record your favorite shows on your computer, complete with TiVo-style time-shifting abilities?

CTX Technology's **TV Studio Xtra** is an inexpensive PCI Card—and-software combination that receives TV signals via cable or an antenna, burns



PHONES go to 1 megapixel.

MEGAPIXEL CAMERA PHONES

Motorola V710

★★★★☆

DW VERDICT: Decent phone, but photos are just so-so.

PRICE: \$250 (with two-year Verizon Wireless contract)

dwfind.com/44824

Samsung MM-A700

★★★★☆

DW VERDICT: Bulky phone offers satisfying snapshots.

PRICE: \$250 (with two-year Sprint PCS contract)

dwfind.com/44826

DVDs, transfers videos to hard disk, and even plays FM radio. It's far from perfect, but it's easy enough for anyone to use.

To record a show, you either press *Record* on Xtra's handheld remote or use the device's scheduling software, which mimics the remote motif with a one-click capture button.

You'll need a big hard drive: A 30-minute MPEG-2 recording gobbles up 1GB of disk space (you can also record video in MPEG-1 or MPEG-4 format). Transferring analog videos from my camcorder was easy,

too, thanks to the supplied set of audio/video cables.

The bad news? Images from cable TV were grainier and darker than I'd expected. The FM tuner had trouble receiving several local stations. And the Help file lacks troubleshooting tips. —Jeff Bertolucci

TV TUNER/RECORDER

CTX Technology TV Studio Xtra

★★★★☆

DW VERDICT: Some TiVo-like features, but could be better.

PRICE: \$70

dwfind.com/44810



The leader in reliable CD, DVD, and digital video solutions

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Stop watching TV, start controlling it!

The Ultimate Personal Video Recorder

CONVERTTM PVR



The Sims Get Real

MY HUSBAND is bummed. Since The Sims 2 landed on my PC, I've been neglecting his dinner needs in favor of serving my sims.

The sequel to one of the most popular games of all time, The Sims 2 puts you in charge of the lives and needs of computerized people. The new version makes sim life

more realistic than ever by including things like life aspirations, a five-day workweek, and the ability to make a baby (and yes, that part does get a little kinky).

On the downside, the game isn't a huge leap forward, and it lacks some of the cool content from the original's expansion packs (such as the ability

PC GAME

The Sims 2

★★★★☆

DW VERDICT: Everything you love about the original and more.

PRICE: \$50

dwfind.com/44812

to adopt a pet). Still, The Sims 2 is super-addictive—so, dear, you're going to be fending for yourself for a while longer.

—Cathy Lu

Graphics and controls:

Sims 2 graphics are much improved, and you get more control over how you view the game. You can zoom in a lot closer and view your house from many angles.

Character creation: You now have much more say in how your sims look—from the bridge of their nose to the way their mouths curve.

Needs: As they did in the original game, all of your sims have basic needs. But the interface that you work with is more crowded now, and switching between Needs and the Aspirations can sometimes be a pain.



Aspiration Meter: Sims don't just need to eat, sleep, and use the toilet anymore. They also have life aspirations, such as earning money or building a family. Fulfilling sims' Wants boosts your rating on the Aspiration Meter and lets you earn points so you can buy special items.



Life stages: Instead of staying forever thirty-something, sims now age. The five stages are baby, toddler, child, adult, and elder. And of course, sims die...sniff.

TALK OF TOKYO

Optware HVD

Why it's hot: Optware's prototype HVD (Holographic Versatile Disc) can store more than 200GB of data—more than 40 times the capacity of DVD and 4 to 8 times the capacity of blue-laser formats. Optware predicts 2006 availability.



Sony PEG-VZ90 Clie PDA

Why it's hot: This is Sony's first Clie to use an OLED (organic light emitting diode) display, which is supposed to be three times brighter and more than a millimeter thinner than an equivalent LCD. No plans for release in the United States.



Hitachi DV-DH400T

Why it's hot: This 400GB recorder captures up to 40 hours of high-def TV. No release plans for the States.

—Martyn Williams

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Shoot. Save. Repeat 30,000 times. The Iomega REV drive stores it all on removable and rewritable 35GB disks. The rugged disks let you organize by year or subject. And its blazing-fast transfer speeds make it easier than ever to share, archive, and save everything.



Your Wireless Home

Ready to expand wireless networking from your home office into home entertainment? Here are some options to consider—and a few pitfalls to avoid—when you do. BY MAGGIE BIGGS

GOING WIRELESS

THE NEW WORLD OF wireless entertainment awaits you, and we're talking about more than adding a set of speakers in the garage. Today you can easily move music around the house without wires. Tomorrow, perhaps, you'll stream movies to your television. That's not a simple proposition yet, but a number of wireless options are easier to perform and already work well.

There are two basic ways to take advantage of these products and cast off your wired connections: You can buy wirelessly enabled equipment, or you can purchase wireless adapters or bridges to connect wired equipment such as a gaming console, which usually has only an ethernet port. A wireless bridge or adapter lets you plug in via ethernet or USB to communicate with the networked content source, whether it be a PC containing audio or video files, or an online provider with lots of downloadable goodies.

Check out the find numbers in this article for links to wireless products that may meet your home entertainment needs. Many networking companies sell similar products, so if you don't find the right device from one, check others.

TIP Put devices other than your wireless network on different frequency bands. For example, instead of using a 2.4-GHz cordless phone, choose a 900-MHz or 5.8-GHz model, or install a Voice over IP phone. dwfind.com/44838

HOME OFFICE

Your plain old PC can house audio and video for streaming to other parts of the house over your wireless network. By putting a repeater in another room, you can boost your network's range.



KITCHEN

In the kitchen, while making dinner, chat on a VoIP phone connected to your network or listen to a wireless MP3 player. dwfind.com/44850 With a wireless card and remote control software, you can use your PDA to control the MP3 player. dwfind.com/44848

TIP In homes, microwave ovens are the most common cause of wireless network interference. If possible, move the microwave so that its back abuts an external wall.



MEDIA AT YOUR SERVICE

A WIRELESS MEDIA player can sit atop any stereo, TV, or entertainment center and pull content from any computer on the home network. Some

players can also stream audio from Internet radio stations.

Another scenario: A home theater PC—a Windows XP Media Center Edition PC, for example,—can link directly to your entertainment system.

You can use your home theater PC not only as a multifunction player in the living room, but also as a server for streaming movies and music to various other rooms in the house.

BEDROOM

In a child's bedroom, you can combine a game console with a wireless bridge to let your kids play games with friends across the Internet. Game consoles typically have only wired ethernet ports, so you'll need a wireless bridge or adapter. dwfind.com/44834



WIRELESS BRIDGE



GAME CONSOLE

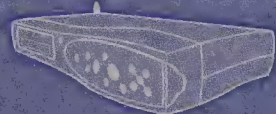
TIP Don't set your wireless devices between large pieces of furniture. And don't put them in a cabinet or on the floor. Make sure that all antennas are upright and not touching anything.

TIP Use a high-gain, signal-boosting antenna on your wireless router or adapter to strengthen the signal and improve performance, so data can reach even a distant room in your house. dwfind.com/44836

FAMILY ROOM

Use a media player to stream MP3 files from the PC in your home office. dwfind.com/44840

Or incorporate a Media Center PC in your entertainment center and use that as a whole-house server for audio and video, and as a video recorder. Eventually, most home entertainment products will support some form of wireless connectivity.

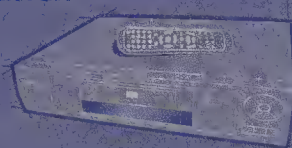


MEDIA PLAYER

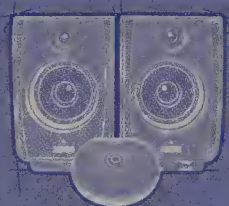
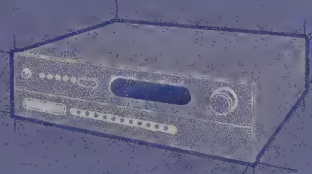
TV RECORDER WITH WIRELESS USB ADAPTER



DVD PLAYER

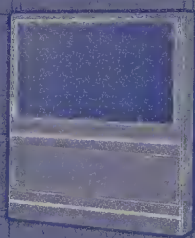


DIGITAL RECEIVER



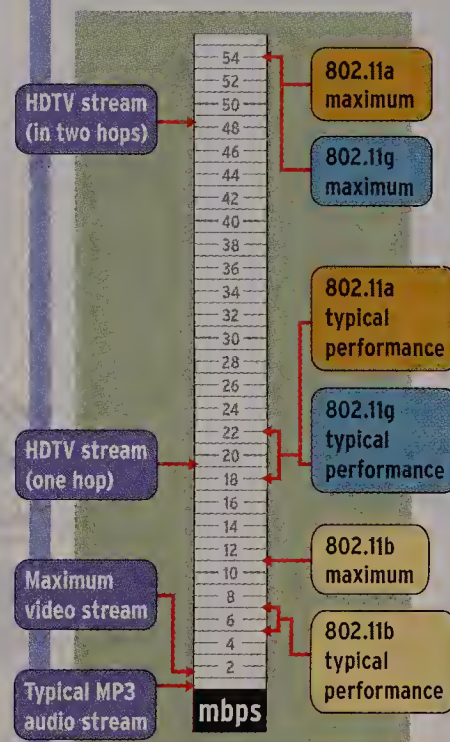
WIRELESS SPEAKERS

TV



TIP Don't disconnect everything. Keeping some of your gear in wired mode may be the best way to avoid interference problems.

MANAGING WIRELESS BANDWIDTH



THERE'S A LIMIT to how much data you can move across your network. To ensure that you don't miss a moment of your favorite movies or tunes, keep this in mind: If your data needs to make more than one hop—because both the source and the receiver are connected wirelessly to the router—you'll double your bandwidth needs. A future example: Streaming an HDTV signal from a Media Center PC in the living room to a router and then to a Media Center extender in a bedroom constitutes two hops and will overburden your network.

A media server does many of the same things as a home theater PC, but it works in a much simpler fashion. Many media servers have wireless capabilities, and they let you manage audio and video from

the comfort of a Web browser.

You can even put phones on your wireless network. Voice over IP (VoIP) phones are compatible with all versions of 802.11, and they promise to deliver audio quality that is

superior to what common cordless phones provide (as well as less interference). ■

Maggie Biggs is a freelance technology writer based in the San Francisco Bay Area.

DIGITAL PHOTOGRAPHY

PHOTO FINISH

**[Digital Photography Can Offer all the
Quality of Film Cameras, and a Lot More]**

In the photography world, a debate slowly simmers. Just how well do photos taken with a digital camera truly stack up against photos shot with traditional film cameras?

The answer, increasingly, is “pretty darn good,” certainly for the overwhelming majority of photos shot by camera enthusiasts, amateurs, and hobbyists. And when you factor in the huge number of advantages and features found in digital photography, it is easy to see why this new technology is booming.

“A digital camera gives you the option of taking a relatively low-resolution photo or a very high-resolution photo, and everything in between,” notes Sam Grosjean, a Houston-based professional photographer. “It used to be that you had to pretty much produce the final photo on your own—and you still can—but there are some excellent alternatives out there now as well.”

Best Buy™ Imagelab Brings Digital Photos to Life

If you are like the growing millions of other digital camera enthusiasts, you want a convenient solution for your digital photo printing needs. With Best Buy™ imagelab (www.bestbuy.com/imagelab), you can get high-quality prints just the way you

want them, without ever leaving the comfort of your home.

Upload your photos from the Best Buy imagelab Web site into your personal photo album. Order prints of any size, even different-sized prints for each photo, and size and crop your photos to see only what you want in your prints. You can even correct errors like the dreaded “red-eye”—all online.

It's also a breeze to create customized greeting cards from your favorite prints—even calendars



with special prints for each month. Place your order and

the finished photos, printed on high-grade, long-lasting photo paper, will be mailed anywhere in the US. (There's a nominal delivery fee.) It's literally that easy. You can also create online photo albums to share easily and quickly with family members and friends.

Or you can visit an in-store Best Buy imagelab and take advantage of the digital imaging expertise of Best Buy Photologists, standing by to assist you with your digital photo printing. These specially-trained professionals will work side-by-side with you, offering tips and techniques that produce stunning digital photos. What's more, you will leave the store that day with your digital photos in hand and ready to share.

■ *Check out all the action today at www.bestbuy.com/imagelab.*

(Continued on page 2)

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DIGITAL PHOTOGRAPHY

(Continued from page 1)

Leverage Your Camera's Features

So just how do you get photos that essentially rival the prints from a film camera? Grosjean says it's simple. "Typical digital cameras today, even cameras selling for \$100, can take a 3-megapixel photo, with five and six megapixels more common. Taking special shots at those higher settings will definitely deliver finished photos that compare very favorably with film cameras."

Of course, they take up a lot of your camera's memory. But for most photos, you don't need the higher settings anyway. "My advice is to experiment with different settings," Grosjean says. "Take the same shot with three or four different megapixel settings and compare the quality. You'll be surprised at how good the shots are, even on the lower settings."

Energizer® Batteries Deliver the Long-Lasting Results Users Want and Need

Next to the camera itself, perhaps the most vital component of the digital photography environment is the batteries. If they don't work, the camera doesn't work either.

That's why Energizer® e²® Lithium batteries (www.energizer.com) are the batteries of choice for digital camera lovers. They're the world's longest-lasting AA and AAA batteries in high-tech devices. They also work well in a wide variety of conditions, including extreme temperatures in the dead of winter and the heat of summer.

How much longer *do* the "world's-longest-lasting" AA and AAA batteries last? Try up to *seven times longer* than ordinary alkaline batteries in digital cameras*, depending upon the camera used. The Energizer® e²® Lithium AA battery can power your digital camera to shoot up to 600 photos, compared with about 80 photos using alkaline batteries.*

The Energizer® Lithium line also includes the world's first AAA Lithium battery. Compared with typical alkaline batteries, Energizer® e²® Lithium AAA batteries deliver 4.5 hours of digital music from an MP3 player. They last 3.5 hours longer in CD players, and up to seven times longer in digital cameras versus ordinary alkaline.*



Energizer® e²(R) lithium batteries are the world's longest-lasting AA and AAA batteries in high-tech devices.

Not only are the Energizer® e²® Lithium batteries longer-lasting, but they are also lightweight—up to 33% lighter than alkaline batteries.

■ For more information on this powerful lineup of Lithium batteries, click now on www.energizer.com.

Rich in Features and Fun

Apart from the simple act of shooting at different pixel ratings to get the quality shots you want, Grosjean notes that digital photography enthusiasts often don't take advantage of another user-friendly camera feature: namely, the zoom lens. The bottom line is, if you can't get close to your subject, zoom in on it. Otherwise you end up trying to enlarge digital shots on the computer, which results in fuzziness no matter how the photos are ultimately printed.

Here again, Grosjean recommends taking the same shot—say, a tree or a flower—from a distance with several different zoom settings. Then compare the photos both on screen and on actual photos (which he suggests printing out on regular paper to test the samples, saving photo paper for finished shots only).

Finish with Filters

There is one more feature that is common to both digital and film cameras that can enhance overall photo quality simply and easily. Screw-on lens filters do more than just protect the lens from scratches and environmental hazards. Used properly, they help render photos that reproduce the actual image being shot with the greatest possible accuracy and fidelity.

Even low-cost polarizing filters act like a good pair of sunglasses for your camera, eliminating harsh glare and bursts of unwanted bright light in your photos, including glare off water. Other filters compensate for strong or irregular inside lighting conditions, such as combinations of fluorescent and incandescent lighting that can wreak havoc with photos.

The bottom line is that by taking advantage of the truly easy-to-use features of your digital camera, you can consistently produce photos that will rival the output of the majority of film cameras used by other photography enthusiasts.

*Results vary by camera.



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Energizer® e² Lithium AA and AAA batteries are the only batteries built with advanced lithium technology so they last up to seven times longer in your power-hungry digital camera. Energizer® e² AA and AAA Lithium batteries provide exceptional life in digital cameras, are lightweight and operate well in extreme temperatures.*

*Vs. ordinary alkaline. Results vary by device.



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NEXT-GENERATION DVD

YOU'VE ALREADY FALLEN hard for those seductive, shiny little platters—in fact, when you're given the choice, DVDs are all you ever use anymore to watch movies. So why should you settle for clunky old tape to record the latest episode of *CSI*? Today's DVD recorders pack features that your ancient VCR could only dream of. And believe it or not, they're now budget-friendly as well, thanks to a price drop of nearly 50 percent over the past year.

A DVD recorder has a lot more going for it than its little red Record button. For one thing, you'll be free of analog tape and its tangle of related hassles. No more tedious rewinding or fast-forwarding to get to the part you want to see: Chapter marks let you jump to your favorite scenes easily. Image quality is better than with VHS, and it never degrades over time: What you see, your kids will see. And gone are the choppy images you would see in VCRs whenever you resumed recording after a pause.

We tested two classes of recorders: those with hard drives, and those without. We also looked at an emerging class of recorders that combine a DVD recorder with either a VCR or a TiVo programming guide (see "Specialty Combos," page 38), inspected a device that straddles living-room and PC recording, and tried out the first models of high-capacity, high-definition recorders (see "Hands-on HD Recording," page 40). Meanwhile, for the latest trends in players (including portable units), check out the "Play It" section on page 44.

Don't look now, but DVD is getting even more entertaining and versatile. We test slick new living-room recorders and portable players, and preview what's next.

**BY JON L. JACOBI
TESTING BY JEFF KUTA AND
THOMAS LUONG**

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ONLINE

FOR EXPANDED PRODUCT SPECS AND COVERAGE—including additional reviews—SEE dwfind.com/44946.

RECORD IT

No matter what your budget is, we've found a DVD recorder for you. The seven DVD recorders that we evaluated in Digital World's Test Center range in price from \$250 to \$1000. Four of them—from JVC, Panasonic, Pioneer, and Sharp—also have a hard disk drive.

The other three models we looked at (from GoVideo, Philips, and Sony) record strictly to DVD. If you've never felt constrained by your VCR's limited capacity, by all means go for a DVD-only recorder: Such models start at around \$250. But if you're willing to spend \$500 or so to obtain a recorder with its own hard drive,

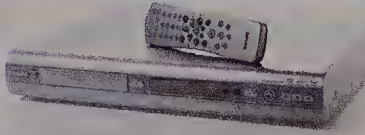
you'll jump to a whole new level of recording rapture.

The most obvious plus of having a hard drive is being able to record hours of content without having to linger nearby so you can swap discs. If you record to disc, you can fit about a week's worth of *Law & Order* reruns—and even then, only at the lowest



A DVD RECORDER FOR EVERY BUDGET

READY TO TAKE THE DVD RECORDING PLUNGE? Our DW Choice is the Pioneer DVR-520H-S, a reasonably priced hard-drive model with a terrific blend of performance and features. Half the price of the Pioneer is our DW Value, the Philips DVD-R615—an elegantly

DVD RECORDER (WITHOUT HARD DRIVE)		DVD RECORDER (WITH HARD DRIVE)	
			
GoVideo R6740 ★★☆☆☆ dwfind.com/44402 \$250	 Philips DVD-R615 ★★☆☆☆ dwfind.com/44404 \$300	Sony RDR-GX300 ★★☆☆☆ dwfind.com/44410 \$500	JVC DR-MH30S ★★★★★ dwfind.com/44412 \$1000
Features			
• Write formats: DVD+R/RW • Time shifting¹: no • Record modes: 1, 2, 4, and 6 hours	• Write formats: DVD+R/RW • Time shifting¹: no • Record modes: 1, 2, 3, 4, 6, and 8 hours; variable bit-rate	• Write formats: DVD±R/RW • Time shifting¹: yes (VR mode) • Record modes: 1, 2, 3, 4, and 6 hours	• Write formats: DVD-R/RW/RAM • Hard drive: 160GB • Dubbing speed: 4X -R, 2X -RW, 2X -RAM • Time shifting¹: yes (hard drive only) • Record modes: 1, 2, 4, 6, and 8 hours; variable bit-rate
Hands-on experience			
• Remote: Good • Interface: Very Good • On-disc editing: Poor	• Remote: Good • Interface: Good • On-disc editing: Good	• Remote: Very Good • Interface: Outstanding • On-disc editing: Very Good	• Remote: Very Good • Interface: Fair • On-disc editing: Good
Performance			
• Image quality: Fair	• Image quality: Very Good	• Image quality: Very Good	• Image quality: Good • Copy from hard drive to DVD-R²: 13:48 • Copy from hard drive to DVD-RAM: 24:54
DW verdict			
This easy-to-use, bargain-priced recorder is the best deal in the roundup—but only if you can live with subpar image quality and virtually no on-disc editing. The lack of VCR Plus+ scheduling is regrettable.	This inexpensive model's pretty interface offsets some dubious design decisions. For example, if you watch TV through the recorder, the image quality reflects the recording mode the unit is set for.	I admired how this recorder doesn't force you to choose between + and - DVD media. I also liked its classy, intuitive on-screen display. But the lack of DV input makes it a poor choice for digital camcorder users.	The remote that comes with this pricey model is one of my favorites, and I loved the fast channel changing. But the interface needs reorganizing, and I expected better dubbing performance and design.

All models have Dolby Digital and DTS decoding, VCR Plus+ scheduling, and one-touch recording, unless otherwise noted. All prices are street. ¹ Can pause and resume playback of live television during recording. ² Time to dub one hour of high quality content from the recorder's hard drive to DVD, in minutes and seconds. **HOW WE TEST:** For each recorder, we recorded 1 hour of video to write-once DVD, and then viewed the discs on a 30-inch wide-screen CRT HDTV monitor from Philips (model 30pw8402/37). A jury evaluated the image

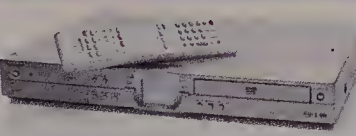
recording quality. But if your recorder has a hard drive, you can save nearly a month's worth of shows at the highest recording quality. For an 80GB hard drive, figure you can record about 17 hours at the highest quality setting, and over 100 hours in low-quality mode (figures will vary slightly from model to model).

For sports fans, a hard drive is a must: Fast-moving action of the type seen in football or basketball games taxes the MPEG-2 compression that DVD recorders use. To optimize image quality, you'll want to record in the highest quality mode possible. Only a hard drive has the space to record a multi-hour game; to fit an

entire 4- to 6-hour event on a single disc, you'd have to use a low quality recording mode, and the resulting image would look inferior to video recorded in EP (Extended Play) mode on a VHS tape. And you get another benefit when recording to hard drive: You can easily edit your video, cutting out pesky commercials and splicing together favorite scenes for endless instant replay.

In the group of recorders we tested, we found one clear DW Choice: the \$600 Pioneer DVR-520H-S, an 80GB hard drive model that delivers high-speed dubbing and great image quality. For budget-conscious buyers, we selected the \$300 Philips ►

designed bare-bones model that can deftly handle your day-to-day recording needs, in spite of a few usability quirks. We liked the Panasonic DMR-E95H's attractive TV Guide On-Screen programming guide.

		
Panasonic DMR-E95HS ★★★★☆ dwfind.com/44414 \$800	Pioneer DVR-520H-S DW Choice ★★★★★ dwfind.com/44406 \$600	Sharp DV-H300U ★★★★☆ dwfind.com/44408 \$525
• Write formats: DVD-R/RAM • Hard drive: 160GB • Dubbing speed: 4X-R, 3X-RAM • Time shifting¹: yes (DVD and hard drive) • Record modes: 1, 2, 4, 6, and 8 hours; variable bit-rate	• Write formats: DVD-R/RW • Hard drive: 80GB • Dubbing speed: 8X-R, 4X-RW • Time shifting¹: yes (DVD and hard drive) • Record modes: 1, 2, 4, and 6 hours; variable bit-rate	• Write formats: DVD±R/RW • Hard drive: 80GB • Dubbing speed: 2X-R, 2X-RW • Time shifting¹: yes (DVD and hard drive) • Record modes: 1, 2, 4, and 6 hours
• Remote: Very Good • Interface: Good • On-disc editing: Very Good	• Remote: Good • Interface: Good • On-disc editing: Very Good	• Remote: Very Good • Interface: Fair • On-disc editing: Very Good
• Image quality: Very Good • Copy from hard drive to DVD-R²: 12:42 • Copy from hard drive to DVD-RAM: 16:00	• Image quality: Very Good • Copy from hard drive to DVD-R²: 7:36 • Copy from hard drive to DVD-RAM: 13:30	• Image quality: Good • Copy from hard drive to DVD-R²: 23:12 • Copy from hard drive to DVD-RAM: 23:06
A roomy 160GB hard drive, slots for flash media, and colorful TV Guide On-Screen electronic program guide are pluses. But I docked points for the clunky interface and mediocre dubbing performance with DVD-R.	Image quality is stellar, and dubbing super-fast. Aside from the cramped remote, I had few complaints. On the wish list: a larger hard drive, an electronic program guide, and faster channel switching.	This unit has a unique and handy feature: picture-in-picture playback of previously recorded content. But poor dubbing speed and incompatibility with some faster-rated media dampened my enthusiasm.

quality at 1-hour mode and 6-hour mode for each recorder, in a blind taste test, comparing the output of each recorder against the output of the others¹.

Tip: IMAGE QUALITY

DVD RECORDERS typically have at least four quality presets: The 2-, 4-, and 6-hour preset modes correspond roughly to the familiar SP, LP, and EP modes on a VCR. In addition, all the recorders we tested offer an uber-high-quality, 1-hour XP mode.

Pick XP or SP mode if you're archiving old tapes and home videos, recording sporting events, or recording something that you want to enjoy at optimal quality. Use 4- or 6-hour mode only if the length of your content forces you to—and if the image quality of the resulting recording isn't a priority.

If you plan to record a program of oddball length, such as a movie on cable TV, adjust the bit rate manually (check for this feature in the recording menu), or select a variable bit-rate setting (a preset that all but the GoVideo, Sharp, and Sony models have). With this option, you can fit a 2.5-hour feature on a single disc at a higher quality level than you'd get if you'd recorded it in 3- or 4-hour mode.

DVD-R615 as our DW Value: In view of its modest price, this model impressed us with its design and its image quality.

At first glance, all seven DVD recorders we inspected seemed almost identical, varying only in their cases' shade of gray (shiny or matte?) or basic black. And except for the GoVideo, their recording quality differed only by a matter of degree. The jury that ensconced itself in Digital World's Test Center often had trouble distinguishing between different devices' recordings captured in high-quality 1-hour mode. Differences among the recordings made in lower-quality, 6-hour mode were somewhat more apparent, but not radically so.

During my hands-on evaluation, I soon realized that subtle design nuances separate DVD recorders from one another. For example, all seven recorders can support a range of DVD media formats—and they vary in their support of format-dependent features. The GoVideo, the Philips, and the Sony all record to DVD+RW, but only the Sony allows you to record one program

while watching another on the same disc. The Sony also gets props for being the only recorder in our roundup that proved to be capable of handling DVD+R/RW and DVD-R/RW media.

Likewise, the recorders vary in their support for VR mode on rewritable discs. (See "Understand VR Mode" on the next page for more details.) Some of the models that have a VR mode permit *chasing playback*, in which you watch earlier portions of a program as you record it on disc until you "catch up."

Typically, you'll find VR mode in models that record to DVD-RAM (including the JVC DR-MH30S and the Panasonic DMR-E95HS models that we tested), as well as some DVD-RW and +RW units (including the JVC, the Pioneer DVR-520H-S, the Philips DVD-R615, the Sharp DV-H300U, and the Sony RDR-GX-300). Of the models we tested in VR mode, only the Panasonic, Pioneer, Sharp, and Sony models support chasing playback on a DVD. If you get a hard drive model, you're in luck: All hard drive models allow chasing playback on the hard drive.

An electronic programming guide can make your recording life a lot less tempestuous as well. Of the models we evaluated in the Test Center, only the Panasonic used a convenient, graphical programming guide, TV Guide On-Screen (we also looked at a preproduction recorder with TiVo; see "Specialty Combos," at left). All of the remaining recorders (except the GoVideo) relied instead on a longstanding scheduling aid, VCR Plus+, which uses numeric programming codes found in most newspapers and television guides.

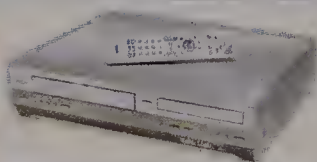
If you don't want to spend an eternity archiving your favorite recordings, dubbing time is an important issue, as our Test Center discovered when it timed how long each hard-drive-equipped unit took to copy a recording from the drive to DVD. The Pioneer smoked the others in these tests—not surprising, since it's the sole model we reviewed that has an 8X burner.

SPECIALTY COMBOS

FREE UP A SHELF in your home entertainment center by opting for a DVD recorder that pulls double duty.

VHS/DVD DUAL-DECK RECORDER

DO YOU HAVE boxes of old tapes that you want to copy to DVD? Dual-deck recorders are appealing for this task, because they simplify synchronizing transfers between tape and DVD recorder.



RCA DRC-8300N

★★★★☆

dwfind.com/44446

\$379

DW verdict

Pro: Push a button, and the DRC-8300N simultaneously starts your tape and begins recording to DVD+R or +RW (other products in this category have this talent also).

I particularly appreciated that the unit stopped playing the tape when the recording disc ran out of room. Timer recordings are notably easy to configure, too.

Con: The device lacks an electronic program guide and VCR Plus+ scheduling.

TIVO/DVD RECORDER

TIVO USERS will especially appreciate this winning combination, which couples TiVo's supremely easy service with a DVD recorder. Includes TiVo's basic, three-day advance guide service.



Toshiba RS-TX20

★★★★☆ (preproduction unit)

dwfind.com/44448

\$700

DW verdict

Pro: I loved how easy this well-designed, 80GB hard-drive recorder makes it to archive recordings to DVD+R or +RW. TiVo program metadata transfers as well, so your disc menus have the same familiar, graphical TiVo interface.

Con: My only disappointment was with the dubbing speed: This model is equipped with a 4X DVD burner, the same as the older Pioneer models (the first to offer TiVo).

DVD RECORDERS WITHOUT HARD DRIVES

GOVIDEO R6740

dwfind.com/44402

★★★ \$250

THIS DVD+R/RW recorder's super-low sticker price is alluring. Unfortunately, the same can't be said for its picture quality: Our jurors ranked it last in all categories. The most common complaints cited washed-out colors, weak contrast, and lack of sharpness in all quality modes. The unit has some usability issues, too: It can schedule only five recordings at a time, it lacks VCR Plus+ programming, it can't trim or edit video on disc, and it doesn't confirm a deletion request before erasing a title.

Despite all its faults, however, the R6740 remains a viable,



BUTTON TO BUTTON: Remote Control Face-Off

TOO MANY BUTTONS on your remote control, and you're always searching for a function you need; too few, and you're endlessly scrolling through menus, or worse. The contoured Philips remote (left) fit comfortably in my hand; and I liked its minimalist button layout, save one irksome attribute: The Forward/Reverse and Previous/Next chapter functions occupy the same two buttons. Pioneer's remote (right) separates those two functions, as most remotes do, but its buttons are too numerous and too close together.

inexpensive VCR replacement. Of the seven models I evaluated, the GoVideo has the simplest, most intuitive setup and interface, with every setting exactly where I expected it to be. The graphical Easy Guider wizard makes recording, playback, and disc handling chores so easy that even my mom—a confirmed Luddite—could handle them. (Disc finalization, a required step with all DVD recorders before you can take your recorded disc and play it on another DVD player, is particularly straightforward.) I also admired the uncluttered layout of the remote, but I was frustrated by its persnickety insistence that the user angle it directly toward the unit's infrared port.

The pewter-hued R6740 has a surprising number of connectivity options, including a FireWire digital video input on the front panel, and both coaxial and optical digital audio output.

PHILIPS DVD-R615

dwfind.com/44404

★★★★★ \$300

DW Choice PHILIPS'S HANDSOME, SILVER-FACED DVD-R615 impressed me with its physical elegance and with the simplicity and feel of its remote. It also has a visually appealing on-screen interface, and it produces good-looking images—qualities that make this model our DW Value recommendation for people seeking to jump into DVD recording.

Unlike most recorders, this unit can fit a whopping 8 hours of content on a single DVD+R/RW disc, which is handy, even if the quality in that mode is VHS-level, at best. The quality of the 1-hour and 6-hour recordings was far better, putting the DVD-R615 in middle of a very close pack in our jury tests; fine lines and details weren't as distinct as with most recorders, but color reproduction was in the upper echelon.

But in spite of everything I liked about the Philips, I found that it had its share of quirks, too. For example, the remote combines two key functions on one button (see "Remote Control Face-Off" above). Also, though the Philips's interface is undeniably attractive, it's less intuitive than it could be because it relies too heavily on icons. And whenever the interface appeared on screen, both picture and sound disappeared—a real annoyance.

The Philips recorder doesn't permit very much in the way of advanced editing, but you can rename titles and chapters on a disc, and you can insert chapter marks anywhere you like.

SONY RDR-GX300

dwfind.com/44410

★★★★★ \$500

SONY'S BOXY, SOLID-LOOKING recorder is the only one in our roundup that supports DVD-R/RW and DVD+R/RW media; this flexibility is a boon if you're at the 24-hour market late at night, desperate to buy whatever spindle of media the store sells. Either way, you'll like the quality: our jury placed this model near the top in our viewing tests at both high and low recording quality.

The RDR-GX300's on-screen interface is as good-looking as the Philips's and is nearly as intuitive as the GoVideo's. On top of that, it adds transparent menus and animation to the mix. Unlike the less expensive Philips and GoVideo units, the Sony permits basic on-disc editing (so, for example, you can chop out commercials). Plus, it supports VR mode and time shifting.

Sony's remote is so long that I found it a bit ungainly; and it lacks commercial skip. But I liked how Sony labeled it, and how the slide-away cover protects the editing buttons.

Unfortunately, the pricey RDR-GX300 lacks a DV input—an omission that kills much of its appeal to digital video cam- ▶

Tip: UNDERSTAND VR MODE

REWRITABLE DVD discs can be recorded in two video formats: DVD-Video, the format that commercial movies use; or VR (Video Recording). VR mode enables on-disc editing, so you can alter menus, change the menu background, and retitle a disc. In VR mode, space occupied by deleted scenes or titles is actually freed up; in DVD-Video mode, it's not available until you reformat the disc. Discs recorded in VR mode are compatible only with players and recorders that support VR. Still, if your recorder offers VR, use it: That way, you have the option to edit if you wish; and if not, you can always convert the disc to DVD-Video later.



BLUE LASER DISCS

Hands-On HD Recording

TODAY'S DVD RECORDERS can't handle the super-size video files that HDTV content requires. Next-generation Blu-ray Disc and HD-DVD recorders will have the necessary capacity, but they won't appear on store shelves until the end of 2005.

Why the delay? The specs for both of these nascent, competing blue-laser optical formats are still being massaged. Hollywood has yet to cast a bloc vote, but Blu-ray Disc has one distinct edge over HD-DVD: Sony—whose movie studio division just bought MGM Studios, and which controls a vast library of Hollywood favorites—is among the consumer electronics heavyweights on board for the format.

In Japan, you can record high-definition broadcasts today with the first generation of Blu-ray Disc recorders, Sony's BDZ-S77 and Panasonic's E700BD. But for now, these units are Japan-only: Neither is compatible with our HDTV standard and broadcasting system. They're pricey, too. At about \$2700, either one will leave a wide-screen-size hole in your wallet.

HIGH-DEF RECORDING BLUES

IN MY INFORMAL tests, I was impressed by the image quality of these units. Recorded HDTV images were comparable to what I saw live—sharp, with bright colors and realistic detail.

Less impressive was the incompatibility between the two recorders. Of the two 23GB BD-RE discs I burned on the Sony (that's the only capacity it supports), just one played back in the Panasonic. The Sony played both of the 25GB BD-RE discs that I burned on the Panasonic, but neither of the two 50GB dual-layer discs. Discs currently cost about \$50 a pop.

Although blue laser recording is here, it's not ready for the movies just yet: Neither first-generation unit will be able to play prerecorded Blu-ray Disc content when it arrives in 2007. So you won't be able to watch an ultrasharp Gandalf take on Saruman in *The Lord of the Rings*—if the trilogy comes out in high-def BD-ROM in our lifetime. —Martyn Williams, in Tokyo

era buffs. A couple of other issues I ran into: Some of the more technical video and audio settings could use on-screen help to explain their functions, and the recorder won't let you extend a spur-of-the-moment OTR session once you begin recording—an inexcusable oversight. Such features omissions, along with the device's comparatively high price, make this model a tough sell.

DVD RECORDERS WITH HARD DRIVES

JVC DR-MH30S

dwfind.com/44412

★★★★★ \$1000

I EXPECTED BIG things from this DVD-R/RW/RAM recorder, which comes with a 160GB hard drive—largely because of its sky-high price. In some ways my expectations were met: The DR-MH30S was the only unit in the review that successfully read DVD+R Double Layer discs and WMA CDs; it switched channels quickly enough to feed my bad habit of vegetable-state surfing; and its video editor (which even lets you preview edits) is as simple as any I've seen. Its remote was a pleasure to use, too: The color scheme makes the controls easy to read, and the buttons are well spaced and logically organized.

Regrettably, our jury ranked the JVC near the bottom of the ladder in our image tests: It placed sixth out of seven when tested in 1-hour quality mode, and it finished fifth out of seven when run in 6-hour mode. That performance puts it well ahead of the GoVideo, but slightly behind the other recorders here.

Dubbing operations were mixed: The DR-MH30S was slightly slower than the second-place Panasonic at writing to DVD-R, but it was easily the slowest unit in the roundup at dubbing to rewritable DVD-RAM discs (see the chart on page 36 for details).

PANASONIC DMR-E95HS

dwfind.com/44414

★★★★★ \$800

THE DMR-E95HS DVD-RAM/-R recorder, with its 160GB hard drive, is by far the most feature-laden unit in the bunch. This model is the only one we tested that has an integrated electronic program guide, Gemstar's TV Guide On-Screen. It's also the only one with SD Card and PC Card slots (you'll need a PC Card adapter for non-SD media).

The DMR-E95HS's recordings will please your eyes, too: Our jury ranked it third in output quality on both the 1-hour test and the 6-hour test, where it earned generally high marks for detail, brightness, and contrast. At dubbing to rewritable discs, the DMR-E95HS was a close runner-up to the Pioneer (the Panasonic uses DVD-RAM, not DVD-RW). And it finished second



WIRED

WIRELESS



- ROUTERS

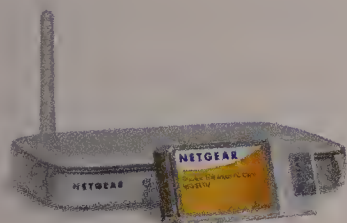
- GATEWAYS



- ADAPTERS

- MULTIMEDIA

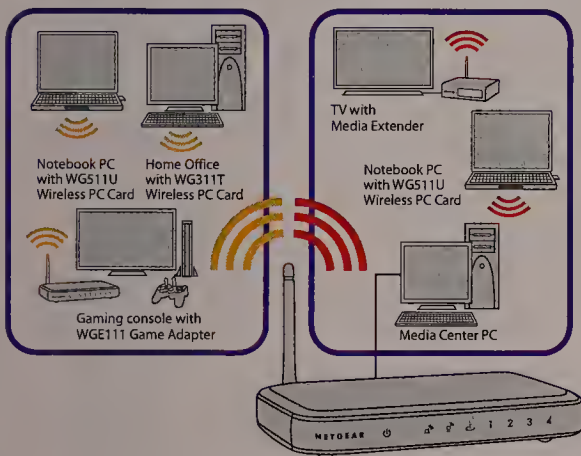
- VOICE OVER IP



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to the Pioneer—albeit more distantly—at dubbing to DVD-R.

Though the DMR-E95's on-screen interface is generally easy to navigate, you can't access all functions from a central menu, and the interface uses some odd nomenclature.

Another peeve: Some of the recorder's functions are available only in hard-drive mode, and others only in DVD mode. On the positive side, the remote control fit comfortably in my hand, and I found its button layout intelligent and finger-friendly.

PIONEER DVR-520H-S

dwfind.com/44406

★★★★ \$600

DW Choice The more you archive video from this unit's 80GB hard drive to DVD-R, the happier you'll be that you bought it. The only hard-drive model we looked at that has an 8X DVD recorder inside, the DVR-520H-S nearly halved the times of its closest competitors, the Panasonic DMR-E95HS and the JVC DR-MH30S, at transferring a full disc of 1-hour quality video to DVD-R.

But the Pioneer isn't only about speed. This model placed first in our overall image quality tests, too, in both 1-hour and 6-hour modes. And it's packed with features, including a disc librarian for maintaining a history of your recordings (if you opt to enter disc information manually into the unit's memory), and an editor for trimming video and deleting commercials.

The DVR-520H-S's on-screen interface may not be the prettiest one in the roundup, but it is reasonably intuitive, offering a good combination of graphics and text. And I loved this model's convenient on-remote commercial skip, which lets you add 30-second increments to the skip time so that you can jump past up to 5 minutes' worth of commercials at once.

Although the Pioneer stands tall in most respects, I had a few gripes. I wasn't enthusiastic about the remote control's design (see "Remote Control Face-Off" on page 39). The unit's inability to schedule daily or weekly recordings without employing VCR Plus+ codes is mystifying. And as an avid channel surfer, I was unimpressed by the recorder's snail's-pace channel switching.

Tip: PICK YOUR RECORDING MEDIUM

I WANT TO...	SO I'LL USE...	BECAUSE...
Transfer my VHS tapes or home videos to DVD, or record video to archive for posterity	Write-once DVD-R or DVD+R	Write-once discs have the greatest compatibility with other DVD players; and they can last 50 years or more if they're stored carefully.
Record my favorite shows for viewing later, and then erase them so I can record a new show	Rewritable DVD-RAM, DVD-RW, or DVD+RW; or the hard drive	All of these media are easy to reuse. Of the DVD formats, DVD-RAM allows the greatest number of rewrites—but has the least cross-compatibility.
Edit out all of the annoying commercials in a program, or trim a program's length	Rewritable DVD-RAM, DVD-RW, or DVD+RW; or the hard drive	Each of these media can handle advanced editing tasks, but you'll need to check carefully make sure that your recorder explicitly supports doing so.

VIDEO CAPTURE

A Recorder for Living Room and PC



IF YOU JUST WANT to transfer VHS or camcorder tapes to DVD—and you don't have room for another component in your living room—the new, vertically standing **DVDirect** recorder from Sony (\$300) may meet your needs. DVDirect can't replace a stand-alone DVD recorder: It lacks both a remote and a TV tuner, and it has no outputs for playing back video. But it does have analog video inputs and an MPEG-2 video capture board so you can record video to DVD (it even writes to 8.4GB

DVD+R Double Layer media). And after you finish dubbing your collection, you can use DVDirect with your PC as a USB 2.0, 16X double-layer DVD+RW burner.

SHARP DV-H300U

dwfind.com/44408

★★★★ \$525

Sharp's DVD±R/RW recorder manages to be both stylish and spacious with its low-profile, pewter-hued chassis and 80GB hard drive. The 1.5-inch-square backlit LCD readout is refreshingly easy to read, though it might be distracting in a dark room. But I missed the clock: The LCD never shows the time, and it shuts off completely in standby mode unless you change the default settings manually.

Our jury gave the Sharp's recording quality a middle-of-the-pack rating. It finished fourth on our 1-hour-mode test and third on our 6-hour-mode test for overall image quality. Oddly, this model jumped to first place in color quality in 6-hour mode—an outcome we didn't expect, considering that it came in second to last in the same category in 1-hour mode.

Both the Sharp's on-screen setup and its recording interface are logically conceived, even though the screens use a blaring yellow-and-black color scheme and are a tad text-heavy. The above-average-size remote neatly compromises between func-

tionality and simplicity. I liked how this unit, uniquely, let me play previously recorded content back in a picture-in-picture window.

Image quality aside, the biggest issue with the Sharp was its lethargic dubbing performance. On our tests, this model took three times longer than the Pioneer to save video to DVD-R. Another liability: Our evaluation unit didn't recognize blank 4X-RW or 8X-R media, so you may have trouble finding compatible DVD media in a year or two.



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grow



PLAY IT DVD players are shrinking in size, so these days you don't have to confine your movie watching to the living room. Nor are these

portables limited to playing DVDs, as we discovered (see below).

Advances in DVD players range from high-definition playback to universal disc compatibility and networking with your PC.

The \$200 Toshiba SD-5970 we tested optimizes DVD playback for a high-res HDTV display by converting standard-definition DVDs for playback on a high-definition TV. The unit performs the "upconversion" before digitally outputting the image to the TV via an HDMI connector. This reduces image noise, as we saw when we viewed *Pirates of the Caribbean* on an HDTV (we

saw improved color, brightness, and contrast, and smoother diagonal lines). Check dwfind.com/44962 for our review of this player, and an update on trends in universal DVD players.

Networked DVD players are another hot category. They include an ethernet port or Wi-Fi, plus PC software for streaming videos, music, and images to a TV. Second-generation players from GoVideo and Kiss are due out later this year—as is HP's \$1400 Z540 Digital Entertainment Center (with a 160GB hard drive, DVD recorder, and ethernet port), which uses HP's Microsoft Media Center PC extender to stream content to another TV. ■

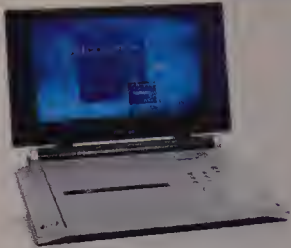
Jon L. Jacobi is a frequent contributor to PC World. Martyn Williams reports from IDG News Service's Tokyo bureau. Test analysts Thomas Luong and Jeff Kuta directed the laboratory testing for this story.

INNOVATIVE, SVELTE PORTABLE DVD PLAYERS

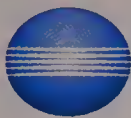
THESE FOUR DVD PLAYERS redefine portability and allow you to take your movie watching on the road. Just remember to bring the popcorn and your favorite flicks. Our DW Value is the feature-

packed GoVideo DP7040. If money is no object, go with the swanky, high-resolution Toshiba SD-P2600, our DW Choice. (See dwfind.com/44646 for additional feature specs.)

DVD PLAYERS

			
GoVideo DP7040 ★★★★★ dwfind.com/44384 \$250	Panasonic DVD-LS55 ★★★★★ dwfind.com/44386 \$500	RCA DRC618N ★★★★★ dwfind.com/44388 \$400	DW Choice Toshiba SD-P2600 ★★★★★ dwfind.com/44392 \$570
Features			
• \$250 • Two headphone jacks • Weight¹: 2.9 pounds • Display size: 7-inch	• \$500 • Two headphone jacks • Weight¹: 2.4 pounds • Display size: 7-inch	• \$400 • One headphone jack • Weight¹: 2.2 pounds • Display size: 7-inch	• \$570 • Two headphone jacks • Weight¹: 3.1 pounds • Display size: 8.9-inch
Hands-on experience			
• Ease of use: Very Good • Display quality: Good • Sound quality²: Fair	• Ease-of-use: Very Good • Display quality: Good • Sound quality²: Fair	• Ease-of-use: Fair (requires remote) • Display quality: Good • Sound quality²: Fair	• Ease-of-use: Very Good • Display quality: Very Good • Sound quality²: Good
DW verdict			
Super-affordable unit offers a great picture and has handy navigation controls. It played the vast majority of media I threw at it. The \$49 TV tuner option and bundled carrying case seal the deal.	I liked this unit's unique dial navigation pad and the funky flip-around display. Includes an FM transmitter for playing audio via your car stereo, but no A/V inputs and no cables.	The only tablet-style player we tested, this model is retro handsome with shiny black and silver accents. But without the remote, the unit lacks controls for navigating DVD menus. Carrying case is included.	Stylish model has a brilliant display that leaves the other contenders sputtering in the dust. A drawback: Recorded DVD playback is limited to DVD-R and -RAM. Comes with an SD card reader.

All prices are street. All models provide a remote control, a car adapter, at least one set of composite video inputs and outputs, and composite cables, unless otherwise noted.
¹ Weight includes battery, but not AC adapter. ² Sound quality of the integrated speakers. ³ All units read DVD-Video movies, and audio, JPEG, and MP3 CDs.



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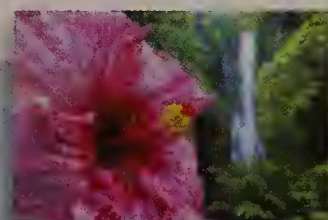
The 7D also incorporates our exclusive CxProcess™ image optimization and a 6 megapixel CCD for razor-sharp, detail-rich photos. Impressive as its technological advancements are, the Maxxum 7D is equally as inspiring to handle—built with high-quality materials and ergonomically-placed controls for easy operation. And you'll love its bright, 2.5 inch LCD for previewing images and navigating an extremely user-friendly menu. The new Maxxum 7D. **Imagine what we can do together.**



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BlackBerry à La Mode

KNOWN FOR ITS REAL-TIME, no-delay e-mail-anywhere capabilities, the BlackBerry PDA has drawn a cult following. The new \$199 **BlackBerry 7100t** cell phone should transform that into a mass following. Besides supporting T-Mobile phone service, it handles personal and corporate mail, instant messaging, Web browsing, and PDA functions. This Swiss Army knife of phones really cuts it.

One thing we'd change: The hybrid qwerty keyboard/phone pad can be daunting at first. dwfind.com/44612

BY MICHAEL S. LASKY
AND THE EDITORS OF DIGITAL WORLD

IT'S A TECH JUNGLE OUT THERE. Stores and sites are swarming with an exotic array of newfangled entertainment gadgets. The sheer abundance is enticing...but selecting the perfect gift and staying within a budget isn't easy.

So we took a virtual machete to a long list of contenders and came up with 23 standouts. Then we asked three *Digital World/PC World* editors to reveal what they'd most like to unwrap this year. We hope this report from the digital wilds helps you with your shopping expeditions.

* What cool tools will you give this holiday season?

Tinier Camera, Bigger Screen

IT'S FUNNY HOW MUCH difference a big, bright LCD can make. The 2-inch screen on the \$399 **Canon PowerShot Digital Elph SD300** makes picture-taking easier. And belying its small chassis, this Elph has enough power to please most users: The SD300 offers 4-megapixel resolution, 3X optical zoom, and fast start-up; and it captures VGA-quality video at 30 frames per second.

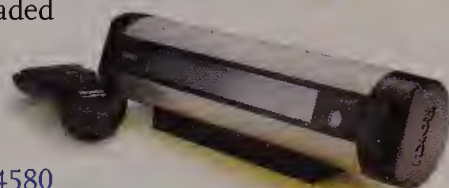
One thing we'd change: Some of the camera's buttons are so tiny and tightly packed that they can be hard to use. dwfind.com/44620



Easy Listening

FEW GADGETS wirelessly stream digital music from a PC to a stereo as neatly as Roku's \$249 **SoundBridge M1000**. The device looks good, its display and remote are functional and friendly, and setup is a snap: It talks directly to iTunes, so you don't have to install any special software.

One thing we'd change: SoundBridge can't play copy-protected music that you've downloaded from Apple's iTunes Music Store. dwfind.com/44580



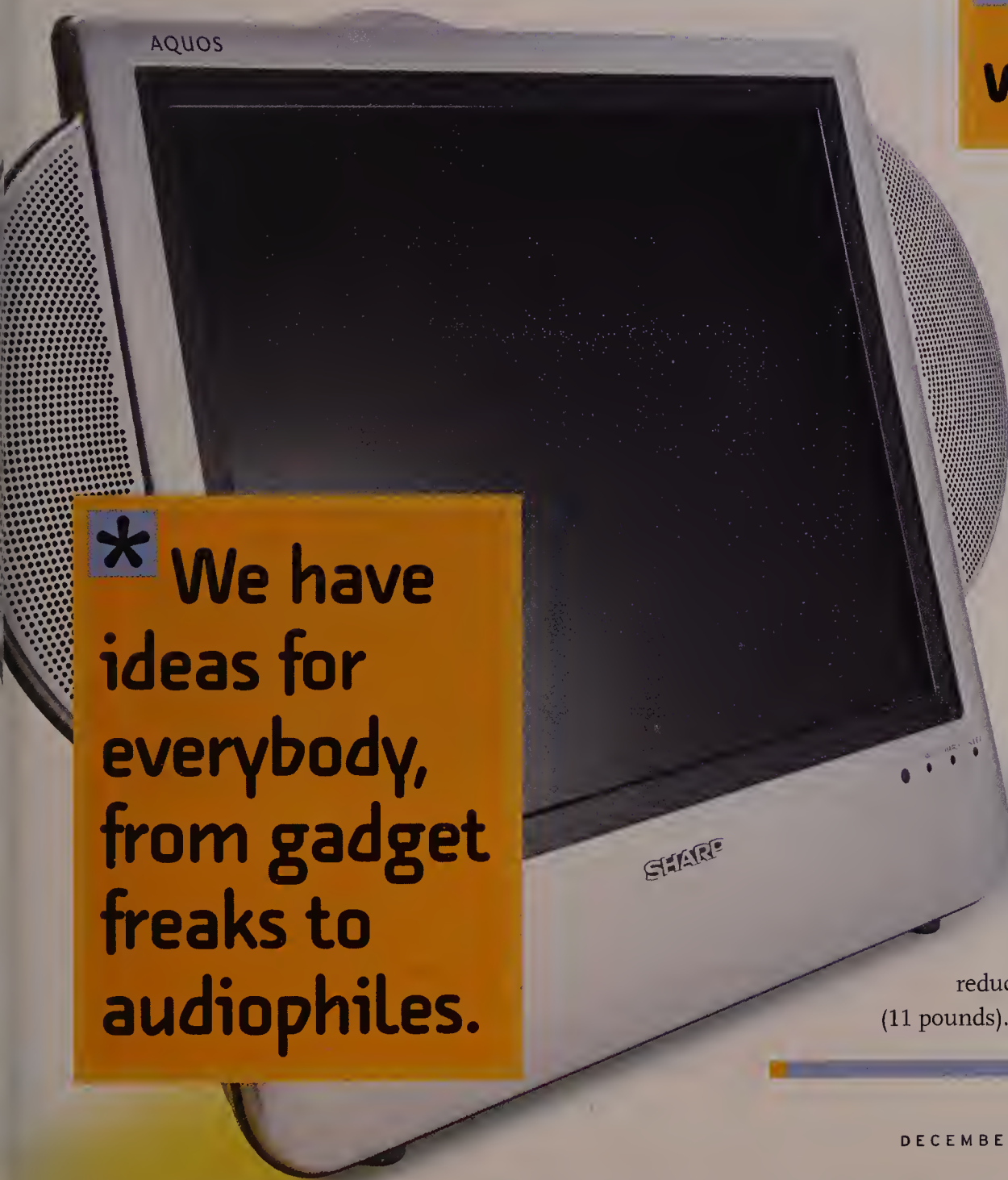
* Which ones will you ask for?

* We have ideas for everybody, from gadget freaks to audiophiles.

TV Without Wires

FLAT-PANEL LCDs are great space savers that provide bright, high-resolution images. But they're not easy to move from room to room. Sharp's **Wireless Aquos LC-15L1U-S** TV takes mobility seriously. The 15-inch flat panel's built-in rechargeable battery supports up to 3 hours of viewing, plus you get a carrying handle and a removable table stand. A separate wireless audiovisual center connects it to cable, VCR, and DVD video sources. Take the panel up to 50 feet away from the A/V center. Voilà: TV anywhere.

One thing we'd change: We'd reduce the device's unexpected heftiness (11 pounds). dwfind.com/44594





Jack-of-All-Trades DVD

THE \$249 **Kanguru Slim FC-RW's** sheer versatility makes it a winner. This 1.5-pound external drive is a DVD player, a CD burner, an MP3 player, and a portable flash card burner. Put a CD-R or CD-RW disc in the drive, insert any of eight types of memory cards in a side slot, and you can burn the card's contents to disc—a great way to move photos, music, or other data with or without a PC. Connect the Kanguru to a TV, and you can view the photos or watch DVD movies.

One thing we'd change: The tiny LCD window could be a tad larger and backlit for better command-code legibility. dwfind.com/44606

This Disc Is in the Can

VERBATIM'S **DigitalMovie** media may look retro with a distinctive film reel printed right on the disc—but therein lies the charm. If you're going to make a movie, why not have it look like a reel of film? A pack of three 4.7GB discs in their own jewel cases costs \$6; each disc stores up to 240 minutes of video.

One thing we'd change: We'd make the jewel cases just a little bit easier to pry open. dwfind.com/44598



* What I want:



These Room-Rattling Speakers Speak to Me

—Eric Dahl, Senior Associate Editor

THE 10-INCH SUBWOOFER on this outstanding audio system can shake a room like an earthquake during a thunderstorm; but even so, it's the little details of Logitech's \$399 **Z-5500 5.1** speaker set that really impress me. The speaker



stands rotate for easy mounting on a wall or placement on a desk, and the sensibly designed digital control center enables me to connect a PC and three other devices simultaneously. In short, these babies look good, work better, and sound great. I want them...now. dwfind.com/44622



Wireless Head Trip

THE GLORIOUS surround-sound output that comes from Pioneer's \$399 **SE-DIR800C Cordless Surround Headphones** is reason enough to recommend them. But even better, they're wireless—allowing you to escape the encumbrance of a cable tether. The diminutive base station supports most Dolby audio formats, and the well-padded headphones have a range of 25 to 30 feet.

One thing we'd change: The infrared wireless technology doesn't let you listen in another room than the one where the base station is located.

dwfind.com/44582

Memory in a Flash

OUR WISH LIST for the perfect USB flash memory key has been granted with the arrival of Imation's

1 GB USB 2.0 Swivel Flash Drive.

It has a protective swivel cap that's impossible to lose, reads and writes with hard-drive-like speed (8-MBps read, 7-MBps write), and offers loads of capacity. The 1GB version is \$289; a 128MB key costs \$49.

One thing we'd change: A carrying case would be nice in lieu of that goofy neck strap. dwfind.com/44596



Make your girlie-man headphones sound beefy.

Steroids for Your Headphones

WANT TO MAKE your girlie-man headphones sound like beefy quadraphonics? Koss Corporation's **SSR-1** is a \$30 portable surround-sound hack that simulates 3D sound for any headphones. Powered by two AAA batteries (good for 30 hours of listening), it includes an integrated amplifier and volume control and gives stereo a more zestful, theaterlike sound.

One thing we'd change: A protective carrying case for the SSR-1 would be a very helpful extra. dwfind.com/44602



Get 40 songs on a silver-dollar-size MP3.



Get a Charge Out of This

UNIVERSAL POWER CHARGERS are certainly convenient—but so far they've been designed to work only with a single higher-voltage device such as a notebook PC. The \$60 **IGo Everywhere Power 3500 Series** doubles the convenience, powering or charging two portable electronic devices simultaneously. Mobile phones, PDAs, MP3 players, and digital cameras can all power up, each one using a separate \$10 PowerTip. You need a different tip for each device. The first two are free.

One thing we'd change: Clearer labeling might help you avoid plugging a device into the wrong port, and possibly frying it. The two ports—one for AC and one for DC—use the same plugs. dwfind.com/44600

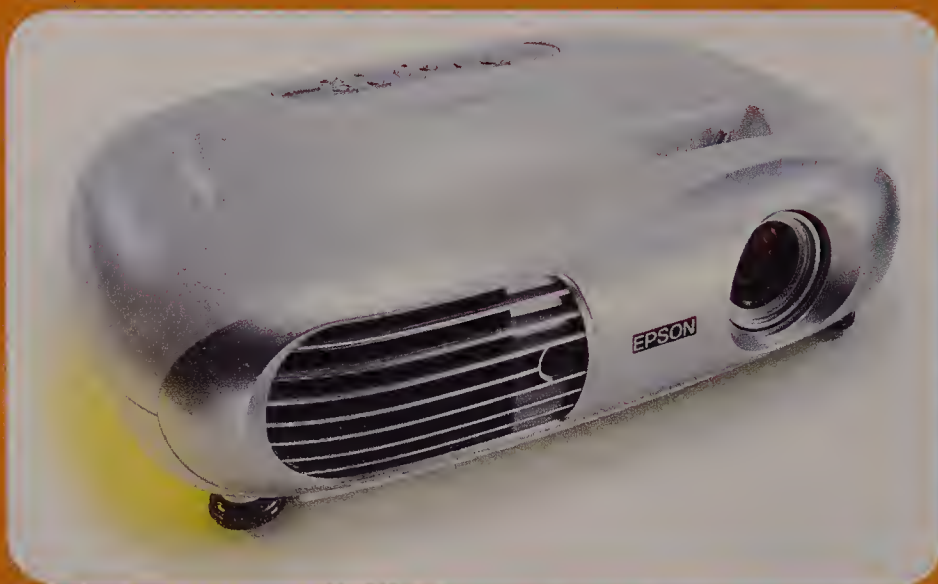
* What I want:



An Oversize Flat Screen for Any Wall

—Michael Lasky, Senior Editor

I DIDN'T WANT TO SPEND a megafortune on one of those sexy 50-inch flat-screen TVs, so I waited. And at last my patience has been rewarded: All I'll have to do is remove the family pictures from my living room wall, and I'll be ready for Epson's \$1299 **PowerLite Home 10+** projector to serve as my big-screen alternative. The PowerLite projects a nearly 7-foot picture from 6 feet away. I can plug a DVD player, TV, video game system, or whatever into one of



the ports on the back, sit back with the couch-potato pocket remote, and enjoy a huge, sharp image for a fraction of the price of a plasma TV. The only way Epson could have made this package better would be by including a universal remote. Now I just need to figure out where I can find a place to hang my pictures. dwfind.com/44624



Silver Dollar Music

THOUGH VIRGIN ELECTRONICS' \$99 **Wearable 128MB MP3 Player** is the size of a silver dollar and weighs just half an ounce, it produces amazingly vibrant sound and holds 40 standard-length songs. The controls consist of two swivel buttons—one on either side of the player—for power, volume control, and song skipping. An armband and custom earbuds are included in the bundle. The supplied USB cable for transferring songs from the PC also charges the device. It's all so simple.

One thing we'd change: The control buttons need a lock to prevent inadvertent activation. dwfind.com/44608



Work and Play: Instant DVD and TV on a Notebook

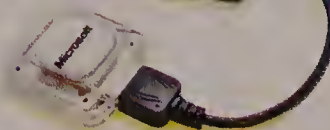
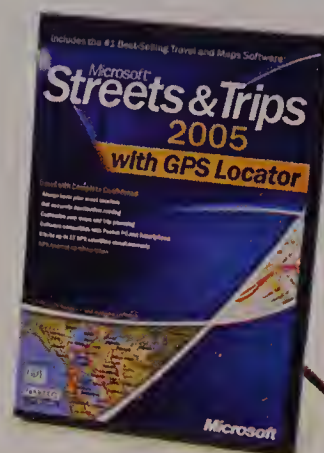
TOSHIBA'S \$2699 **Qosmio** looks and acts like any other laptop equipped with a 15-inch screen at first glance. But wait: The Qosmio lets you play DVDs and watch TV instantly, without having to boot the notebook's Windows XP Media Center Edition software. A high-resolution screen and Harman/Kardon stereo speakers make the Qosmio an all-in-one entertainment center. And the unit's built-in Wi-Fi lets you access the Net from wherever you are.

One thing we'd change: One remote exclusively for television and DVD functions and one remote exclusively for PC functions add up to one remote too many for our crowded living room. dwfind.com/44578

Never Get Lost Again

WHEN YOU'RE in unfamiliar territory, it's comforting to know exactly where you are. With its comprehensive North America digital mapping package and included 2-inch-square Pharos GPS receiver, Microsoft's \$129 **Streets & Trips 2005** helps you find your location in time and space. Providing clear street-by-street directions and information on thousands of restaurants, gas stations, ATMs, and other services and locales, S&T lets you see where you are and plan how to get where you're going. Versions for notebook and Pocket PCs are included.

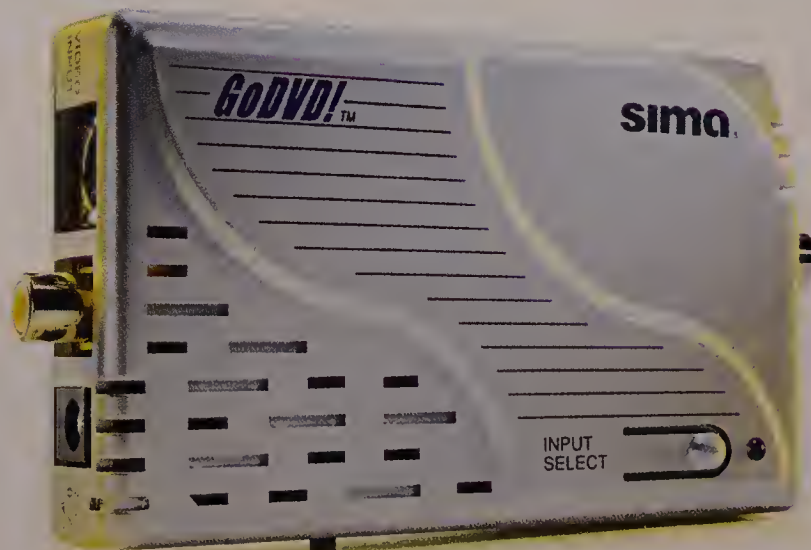
One thing we'd change: The version for Pocket PCs doesn't have travel routing capabilities. dwfind.com/44584



VHS to DVD Easily

ABOUT THE SIZE of a paperback novel, Sima's \$130 **GoDVD CT-2** makes copying old VHS videos to DVD a snap. It even cleans up the video signals while copying any NTSC or PAL tape to DVD. The device adjusts video levels automatically and can produce copies with a crisper-looking picture than you started with.

One thing we'd change: An on-screen display would have been a handy feature for users who would like to confirm the burner's settings. dwfind.com/44586





Desktop Weather Forecaster

WANT TO KNOW what tomorrow's weather will be like? With the \$160 **Color Weather Station** from Oregon Scientific, you need look no further than your desk. The 3.75-inch color LCD screen shows current and forecast weather conditions (indoor and outdoor temperatures, barometric pressure, and humidity) along with a dual-alarm atomic clock. Forecasts appear with amusingly hokey sound-enhanced photos.

One thing we'd change: Though the Sierra Club-type photographs are delightful eye candy, the synthesized environmental sounds have got to go. dwfind.com/44590



Retro Video Games, Retro Prices

JAKKS PACIFIC HAS A SLEW of all-in-one game devices, including a Spider-Man controller (\$25) with five original games; an EA Sports model (\$20) with the Sega Genesis Madden football game; Ms. Pac Man TV Games (\$20) with four other arcade classics; and a World Poker Tour game (\$20) with poker chips for buttons. Each comes

with a joystick or game pad and is ready to run when connected to a TV.

One thing we'd change: A steering wheel controller would make the auto racing games more fun.

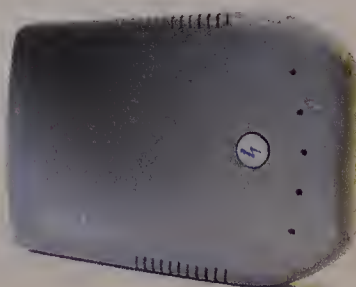
dwfind.com/44616



Wi-Fi for Dial-Up

FOR YEARS, only broadband users have been able to access the Internet wirelessly. Not anymore: With Always on Wireless's \$149 **WiFlyer**, a portable Wi-Fi router for both dial-up and broadband, wireless access is available wherever there's a phone line. Conveniently, the PDA-size device stores the access numbers of all major dial-up service providers (AOL, MSN, EarthLink). The device has a range of up to 300 feet.

One thing we'd change: Including a battery-power option would help make the WiFlyer truly portable. dwfind.com/44610



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HTI500UPS
UPS System



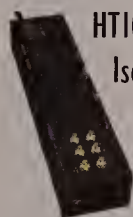
- 3 hr. runtime (recording)/15 min. runtime (viewing)*
- 8 outlets; 6 ft. cord
- I-line coaxial (gold) surge protection
- I-line tel/modem surge protection
- USB port; software for automatic PC receiver shutdown
- \$100,000 Insurance

HTPOWERBAR10
Isobar® Surge Suppressor



- 10 outlets; 8 ft. cord
- 5700 joule rating
- Input voltage LED set
- Isolated Filter Banks; metal housing
- 3-line coaxial (gold) surge protection
- I-line tel/modem surge protection
- \$500,000 Insurance with Data Recovery Warranty

HTI10DBS
Isobar® Surge Suppressor



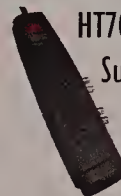
- 10 outlets; 8 ft. cord
- 3570 joule rating
- Isolated Filter Banks; metal housing
- 3-line coaxial (gold) surge protection
- I-line tel/modem/network and I-line tel/modem surge protection
- \$500,000 Insurance with Data Recovery Warranty

HTI1010SAT3
Surge Suppressor



- 10 outlets; 10 ft. cord
- 3345 joule rating
- 3-line coaxial (gold) surge protection
- I-line tel/modem/network surge protection
- \$250,000 Insurance with Data Recovery Warranty

HT706TSAT
Surge Suppressor



- 7 outlets; 6 ft. cord
- 1680 joule rating
- 2-line coaxial surge protection
- I-line tel/modem surge protection
- \$100,000 Insurance

HT706TV
Surge Suppressor



- 7 outlets; 6 ft. cord
- 1080 joule rating
- I-line coaxial surge protection
- \$50,000 Insurance

*Typical runtime based on VCR recording. Actual runtime may vary based on battery condition and load.

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Your Own American Idol

IT LOOKS LIKE A microphone with extra buttons, but IVL Technologies' \$80 **On Key Karaoke Player** is an all-in-one fun machine with 20 built-in pop and traditional songs—more available online. Connect the mike to a TV and sing along as highlighted words pop up on screen. Can't sing on key? Hit the Auto-correct button. Another button adds acoustic effects.

One thing we'd change:

The silly background photos on the TV screen have nothing to do with the song that's being played.

dwfind.com/44614



* What I want:



An Antidote for Bad Airplane Movies

—Melissa Perenson, Associate Editor

TOSHIBA'S \$540 **SD-P2600** portable DVD player is like a miniature movie theater. The player is svelte, but its roomy 8.9-inch LCD produces rich, wide-screen, high-resolution images—bigger than you get on an airplane's puny screen. The wide viewing angle makes enjoying this player a family affair: At least three people can watch simultaneously. Even better, the SD-P2600's integrated stereo speakers pump out rousing 3D audio. dwfind.com/44392



I Spy Wi-Fi



WANT TO AVOID booting up your notebook to a Wi-Fi connection until you know that a network is nearby? Smith Micro Software's \$29 **QuickLink Mobile Wi-Fi Seeker** can help. Push its single button, and four flashing lights indicate the presence and strength of an available signal. The tiny (cigarette-lighter-size) device can detect signals from up to 300 feet away.

One thing we'd change: We'd add a light for multiple signals. dwfind.com/44592

Clean Machine

IROBOT'S \$250 **Roomba Discovery** robotic vacuum cleaner is like a singing dog: The amazing thing isn't how well it works but that it works at all. But why criticize something that sweeps the kitchen while you enjoy dinner?

One thing we'd change: At times, it keeps sweeping floors that are already tidy. dwfind.com/44604 ■



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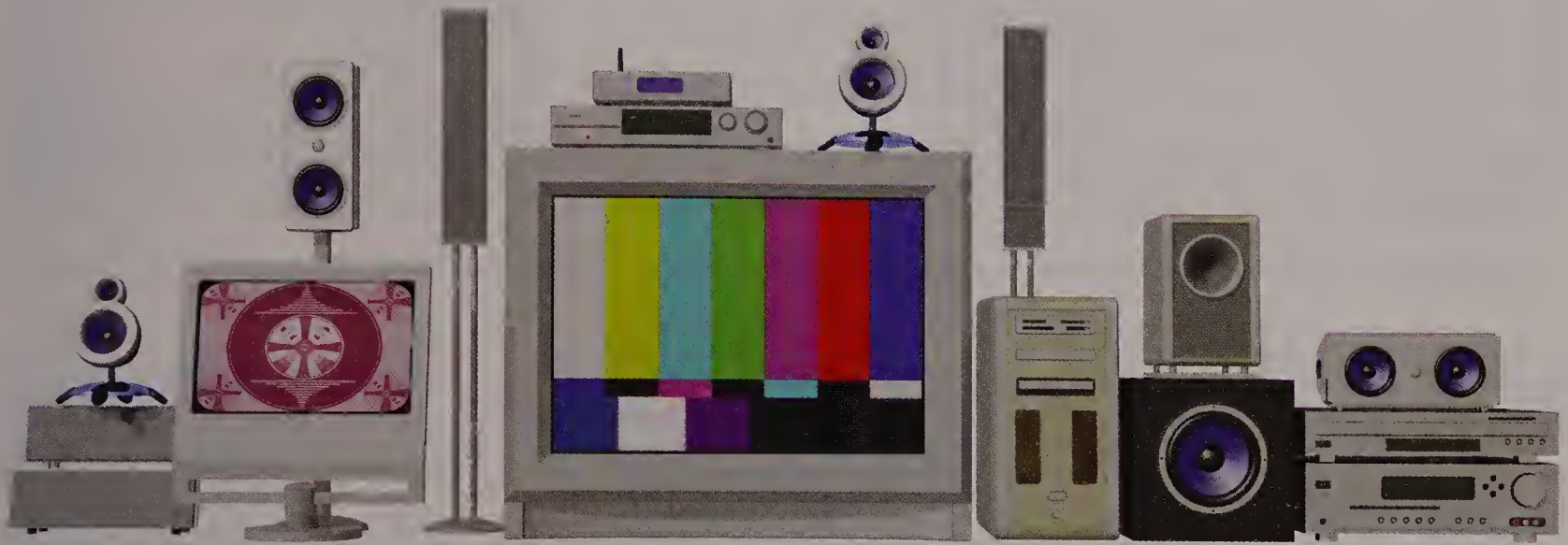
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RITZCAMERA
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ENTERTAINMENT YOUR WAY

Dim the lights! Break out the popcorn! Here's how to put together a system for movies, music, and beyond. Find one that's right for your needs, space, and budget.

BY MICHAEL GOWAN

WITH ANDREW BRANDT AND SEÁN CAPTAIN

BUILDING THE PERFECT HOME entertainment system is a bit like baking a cake: Combining the right ingredients is the key to success. Start with a good display, add a sound system that's sweet to the ear, and top it off with your choice of entertaining extras such as a video recorder or gaming console.

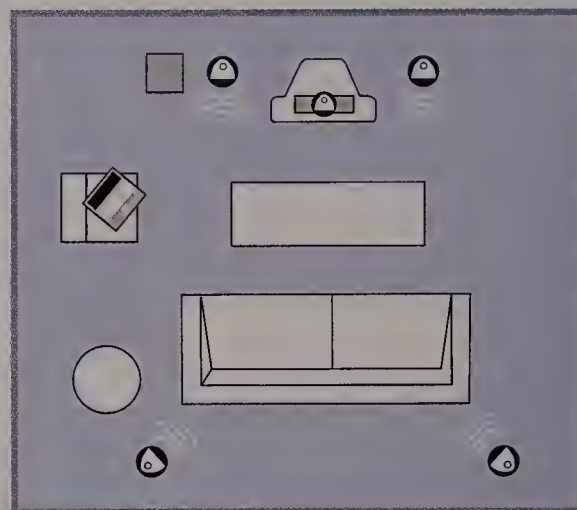
Before you whip out your credit card, though, ask yourself a few questions: How much do you want to spend? What kind of space will it all have to fit into? What will you use it for—catching the latest thriller

on DVD, or watching football? Listening to concertos, or flexing your thumbs against a great game? Or maybe it will perform an assortment of duties, depending on who's holding the remote.

On the following pages, we present five ideal home entertainment systems (with representative products to consider for each), based on advice from home theater experts. Each is tailored to fit different budgets and uses. Find the one that works for you, or mix and match to create your dream system. ►

The Starter Set

For a young couple, living in the city often means having little space and less money. These two enjoy watching movies and listening to digital music—but not too loud, since the neighbors are likely to complain. Three home entertainment devices give them everything they need. Estimated cost: \$700 to \$1100.



TIP Place the center speaker above the television, and put the left and right speakers on either side of the television at the listener's ear level.

TIP Get high-quality speaker and video cables, but don't bother springing for the fanciest (and priciest) ones around. Try a midpriced alternative like Acoustic Research cables.



TIP Avoid no-name components. Getting them serviced might be difficult and could cost more in the end.

1 Midsize CRT television

WHY: Delivers great picture quality for far less money than you'd pay for newer LCD, plasma, and projection technologies.

KEY FEATURES: Flat-screen tube for a truer picture (it doesn't distort straight lines the way a traditional CRT does); component-video inputs to accommodate the sharper output from a progressive-scan DVD player.

RECOMMENDED: 24-inch Sony FD Trinitron WEGA TV KV-24FS120, \$320 dwfind.com/44470; 27-inch Toshiba FST Pure 27AF44, \$400 dwfind.com/44472

2 5.1 home theater in a box

WHY: Single slim component combining receiver and DVD player takes up little room; comes with all the speakers and connecting wires you need, at a relatively low price.

KEY FEATURES: Dolby Digital sound provides theater-like audio; component output supports superior progressive-scan video.

RECOMMENDED: Pioneer HTD-540DV, \$325 dwfind.com/44474; Panasonic SC-HT07, \$400 dwfind.com/4447

3 Wireless digital audio receiver

WHY: Lets you stream digital music from your PC to your stereo from a distance.

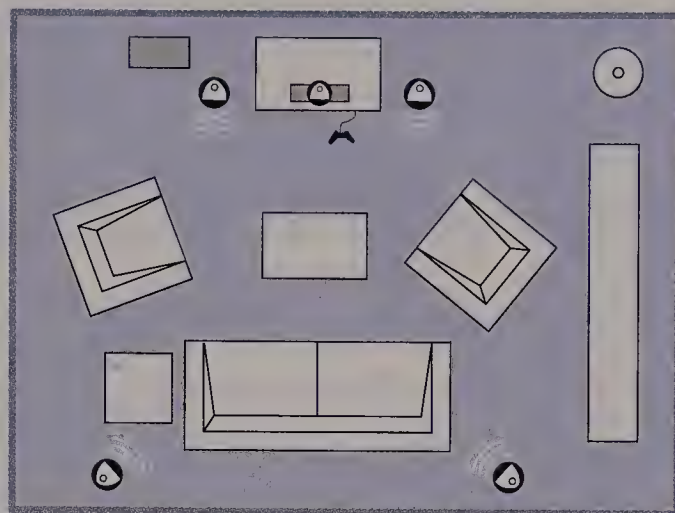
KEY FEATURES: Included Wi-Fi adapter connects to your wireless home network; easy-to-use remote allows you to change songs without getting up from the couch.

RECOMMENDED: Netgear MP101, \$129 dwfind.com/43448; Slim Devices Squeezebox, \$279 dwfind.com/39746

A Family Affair

The family room is the entertainment hub of many households. Kids and their parents use it for watching movies and TV, listening to CDs, and playing video games. Add the old family VCR to the items

recommended below, and you'll have everything you need. Estimated cost: \$2000 to \$3700.



1 High-definition-ready CRT television

WHY: An HD CRT is a great value and fits easily into a home entertainment cabinet.

KEY FEATURES: Excellent overall picture; HD capability lets you add high-definition options (though you'll need a separate HD receiver to tune in to the new standard).

RECOMMENDED: 30-inch Samsung TX-P3075WHF DynaFlat HDTV, \$999 dwfind.com/44480; 36-inch Sony FD Trinitron WEGA HDTV KD-36XS955, \$1699 dwfind.com/44478

2 5.1 speaker system

WHY: A giant step beyond the standard speakers you get with most home-theater-in-a-box systems, these midrange units easily fill a good-size family room with sound.

KEY FEATURES: 5.1 configuration delivers an encompassing home-theater experience for movies, television, games, and music.

RECOMMENDED: Harman/Kardon HKTS14, \$475 dwfind.com/44554; Polk Audio RM6900 series, \$1200 dwfind.com/44490

3 Home theater receiver

WHY: Gives you more power, inputs, outputs, and surround-sound modes than a home-theater-in-a-box receiver would.

KEY FEATURES: Dolby Digital 5.1 playback for a theater-like movie experience; Dolby Pro Logic IIx for music playback; plenty of inputs and outputs to accommodate additional components such as an HD receiver, a gaming console, and even the old VCR.

RECOMMENDED: Panasonic SA-XR50, \$299 dwfind.com/44482; Harman/Kardon AVR 130, \$349 dwfind.com/444484



4 Universal progressive-scan DVD player

WHY: Plays almost any disc you throw at it, reproduces video with great depth and detail, and decodes high-resolution audio formats for incredible music fidelity.

KEY FEATURES: DVD-Audio, SACD, DVD-R/RW, CD audio, photo CD, and MP3 CD playback for unlimited options; component video output for great color and clarity.

RECOMMENDED: Panasonic DVD-F87S, \$130 dwfind.com/44488; Pioneer DV-563, \$250 dwfind.com/44486

TIP Look at the library of games available for various consoles, and choose the console that more of the game titles you like work with.

5 Game console

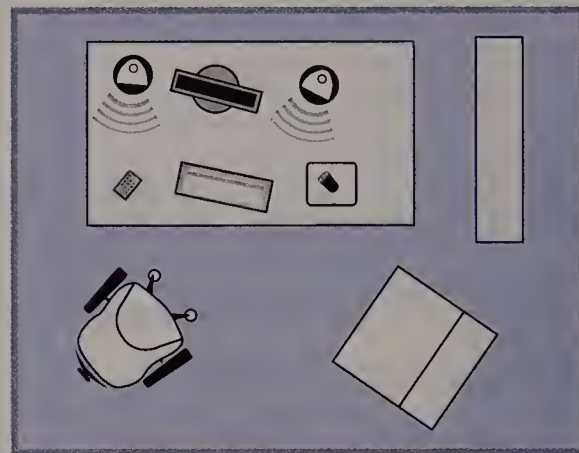
WHY: Plays a wide variety of top games and won't tie up the family PC.

KEY FEATURES: Numerous games, old and new, are available; can play audio CDs and DVD movies as well as games.

RECOMMENDED: Microsoft Xbox \$149 dwfind.com/444496; Sony Playstation 2, \$149 dwfind.com/444494

Home Office Theater

Our self-employed home officer can't work all the time. So her work computer doubles as her entertainment center. This configuration has everything she needs to sit back and watch a movie, catch a TV show she recorded earlier, or listen to her digital music collection, all without sacrificing desk space. Estimated cost: \$2100 to \$3700.



TIP When watching a movie with a 2.1 speaker system, use the virtual surround-sound modes on your PC to emulate theater sound.

TIP When you move back from your desk to view movies, adjust the monitor's viewing angle so that the display won't lose brightness and contrast.



TIP Make sure that you have a cable or satellite TV connection in your office so you can take advantage of your PC's TV tuner and DVR software.

1 Wide-screen LCD monitor

WHY: Large viewing area is great for both computing and movie watching.

KEY FEATURES: Thin-profile display offers lots of screen real estate; wide-screen format is optimal for movies, HDTV, and spreadsheets.

RECOMMENDED: 17-inch wide-screen Samsung SyncMaster 173MW, \$800 dwfind.com/44028; 23-inch wide-screen HP F2304, \$2000 dwfind.com/44500

2 2.1 computer speakers

WHY: You get full sound without the clutter and wires that attend a 5.1 system.

KEY FEATURES: Two front speakers and a powered subwoofer for rich sound from music CDs, video games, and movies.

RECOMMENDED: Klipsch ProMedia GMX A-2.1, \$150 dwfind.com/44502; Harman/Kardon SoundSticks II 2.1, \$165 dwfind.com/44504

3 Media Center PC

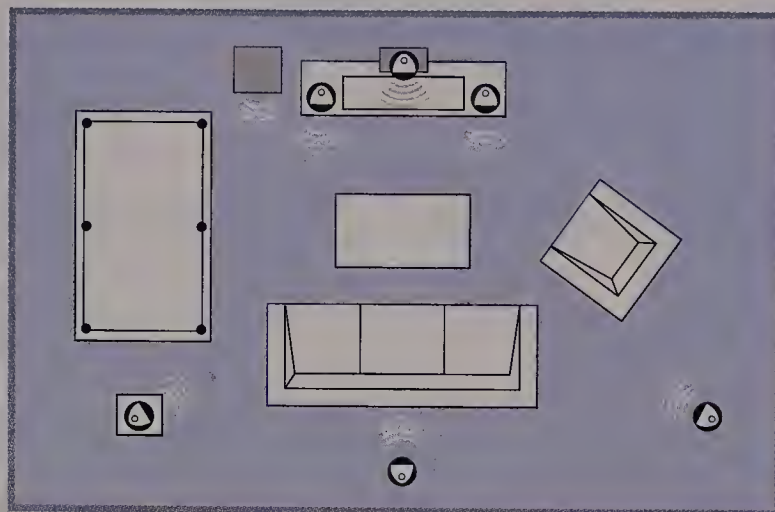
WHY: Puts all the capabilities of a home theater in a powerful business machine.

KEY FEATURES: Video recording software captures programs received through the built-in TV tuner; one box handles DVDs, CD playback, digital music, gaming, and more.

RECOMMENDED: Dell Dimension 8400, \$1138 dwfind.com/44498; HP Media Center PC M1050Y, \$1515 dwfind.com/43984

The Sports Den

A converted basement serves as a shrine to sports of all kinds for these devout fans. TV is king in this room; but when the sports action stops, the system goes on without it, pumping out a soundtrack for games of pool and darts. Estimated cost: \$5100 to \$6100.



TIP In bright light, a rear-projection TV's image tends to wash out more than a CRT TV's does. Put curtains or shades at the windows to block out harsh lighting.

TIP Put your surround speakers on either side of the couch, pointed at each other, and place the rear speaker directly behind the couch.

1 Rear-projection high-definition television

WHY: Bragging rights. Yes, size counts. Plus you get more screen real estate for your money than you do with a plasma display.

KEY FEATURES: LCD or DLP rear projection keeps the set's footprint trim while giving viewers a crisp, lifelike picture.

RECOMMENDED: 50-inch Sony Grand WEGA KDF-50WE655 (LCD), \$3300 dwfind.com/44506; 56-inch Samsung HL-P5663W (DLP), \$4000 dwfind.com/44508

2 6.1 home theater in a box with DVD player

WHY: It's as close to authentic stadium noise

as you can get without buying a ticket.

KEY FEATURES: Added rear speaker brings more depth to the home theater experience; full-featured receiver offers more surround-sound modes for tinkerers.

RECOMMENDED: Denon DHT-485DV, \$700 dwfind.com/44514; Onkyo HT-S777C, \$700 dwfind.com/44512

3 Gaming console with wireless controllers

WHY: When the real-world games are over, it's time to switch to Madden NFL 2005.

KEY FEATURES: Wireless controllers let you sit back on the couch and soak in the glory of the big screen—without getting tangled up

in wires every time you reach for a beer.

RECOMMENDED: Microsoft Xbox, \$149 dwfind.com/444496; Sony Playstation 2, \$149 dwfind.com/444494

4 HDTV digital video recorder

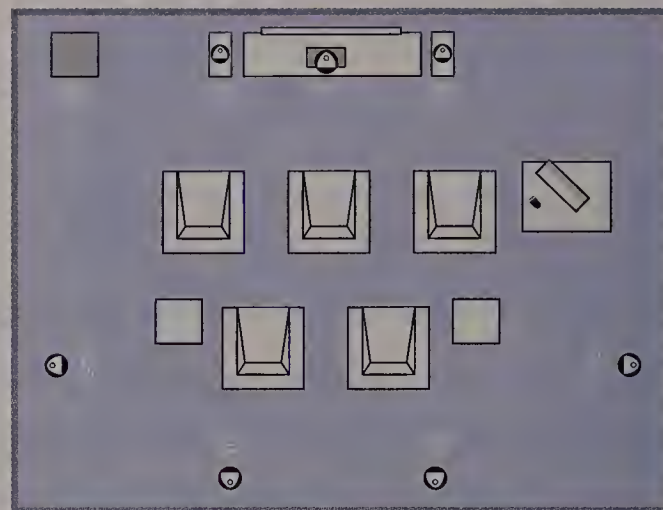
WHY: Catch all the action, even if you weren't around to watch it live, in the vibrant form that only high-definition can offer.

KEY FEATURES: Records video to the hard drive at superior high-definition quality.

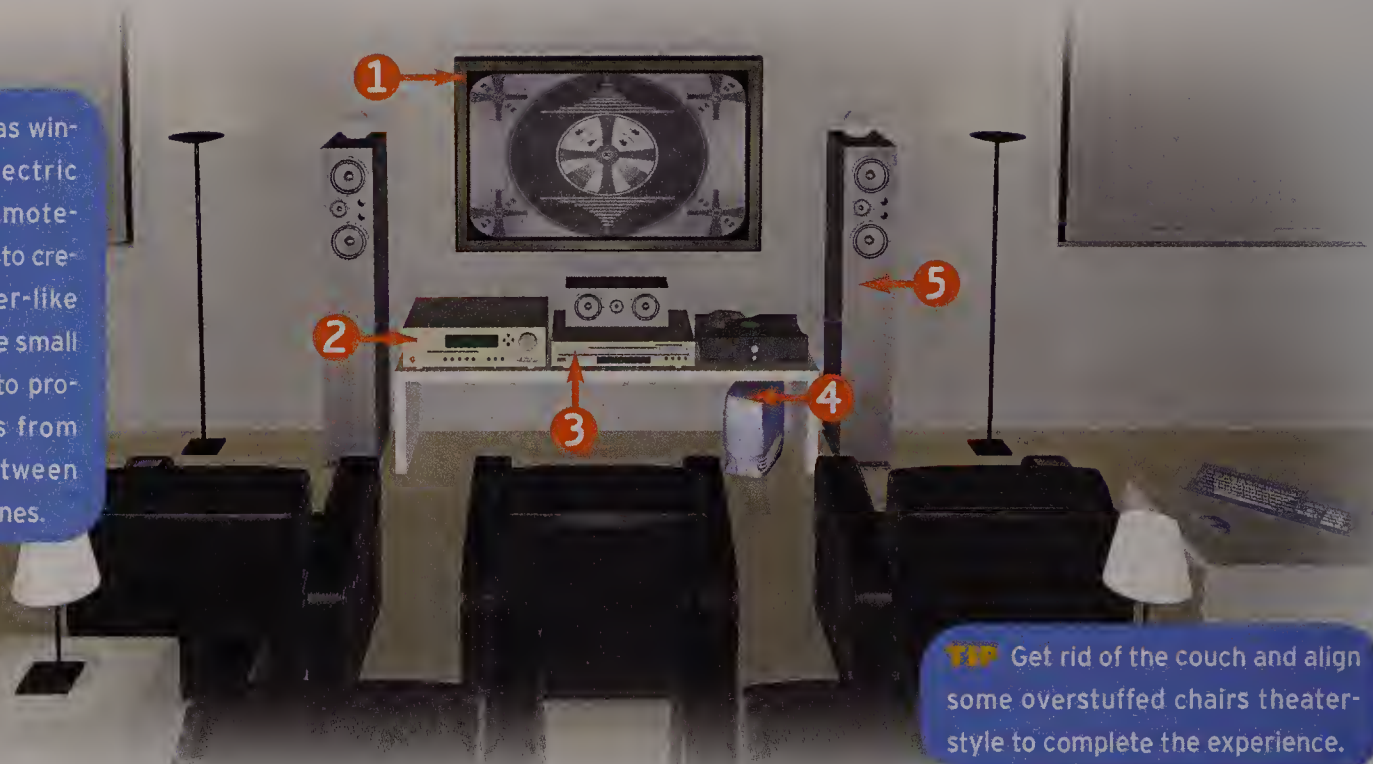
RECOMMENDED: DirecTV HR10-250 DVR with TiVo, \$999 (requires DirecTV satellite service) dwfind.com/43620; DISH Player-DVR 921, \$999 (requires DISH Network satellite service) dwfind.com/44556

Dedicated Home Theater

This no-apologies entertainment room is heaven for movie aficionados—it's set up specifically for hosting private screenings for friends and family. Of course TV, music, and games are wonderful entertainment, too, and this system can handle them all. Estimated cost: \$17,000 to \$22,000.



TIP If this room has windows, install electric (motorized and remote-controlled) curtains to create a dark, theater-like setting. Set up some small background lights to protect viewers' eyes from rapid shifts between bright and dark scenes.



TIP Get rid of the couch and align some overstuffed chairs theater-style to complete the experience.

1 Plasma display

WHY: It's more adaptable for a variety of room layouts than a high-end projection system, and you get a better picture than with DLP or LCD rear-projection units.

KEY FEATURES: Excels in richness and breadth of color, depth of blacks, and fluid handling of movement; wide viewing angle ensures that even if numerous people are watching, everyone sees top image quality.

RECOMMENDED: 40-inch Marantz PD4240D HD monitor, \$8200 dwfind.com/44558; 50-inch Pioneer PDP-5040HD Purevision Plasma TV, \$9000 dwfind.com/43750

2 High-end audio receiver

WHY: Stand-alone receiver can power a 7.1 speaker system, and it has the sound clarity and depth you crave.

KEY FEATURES: Multiple surround-sound modes, advanced set-up options, tons of inputs and outputs, and 7.1 speaker support

make it the hub for home entertainment.

RECOMMENDED: Marantz SR8500, \$1599 dwfind.com/44560; Harman/Kardon AVR 7300, \$2199 dwfind.com/44562

3 DVD recorder with hard drive and TiVo

WHY: Great video playback with serious cachet: You can record a television show and archive your favorite programs to DVD.

KEY FEATURES: Records DVDs, plays back DVD-R/RWs; internal hard drive stores a ton of programs for easy access.

RECOMMENDED: Pioneer DVR-810H-S, \$799 dwfind.com/44574; Toshiba RS-TX60, \$799 dwfind.com/44576

4 Gaming PC and gaming console

WHY: Dual gaming options so you can play any game that comes out.

KEY FEATURES: A top-of-the-line graphics board and at least 1GB of RAM allow the PC

to render games in realistic detail; wireless controllers for the console and for the PC free you to sit back and enjoy Doom 3.

RECOMMENDED: PC: Compaq GX5000T Gaming PC, \$2250 dwfind.com/44626; Alienware Aurora, \$2916 dwfind.com/44588 Gaming console: Microsoft Xbox, \$149 dwfind.com/444496; Sony Playstation 2, \$149 dwfind.com/444494

5 7.1 speaker system

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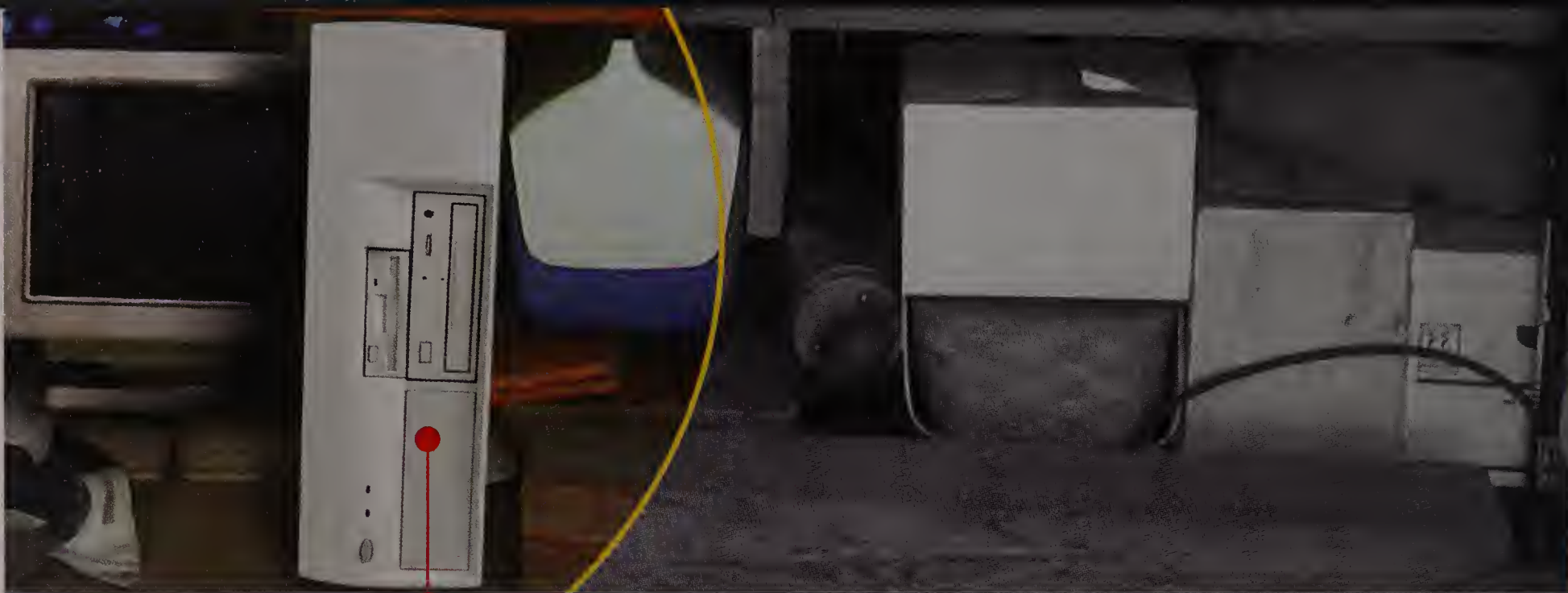
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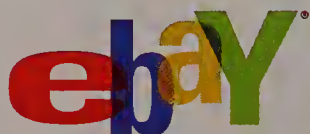
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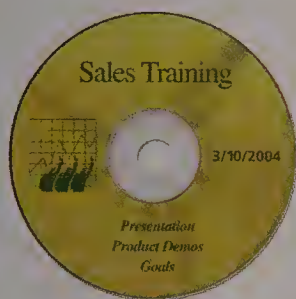


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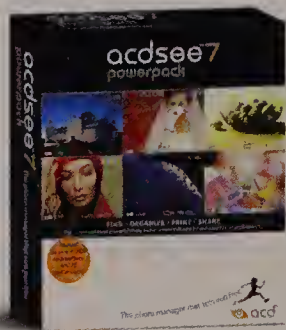
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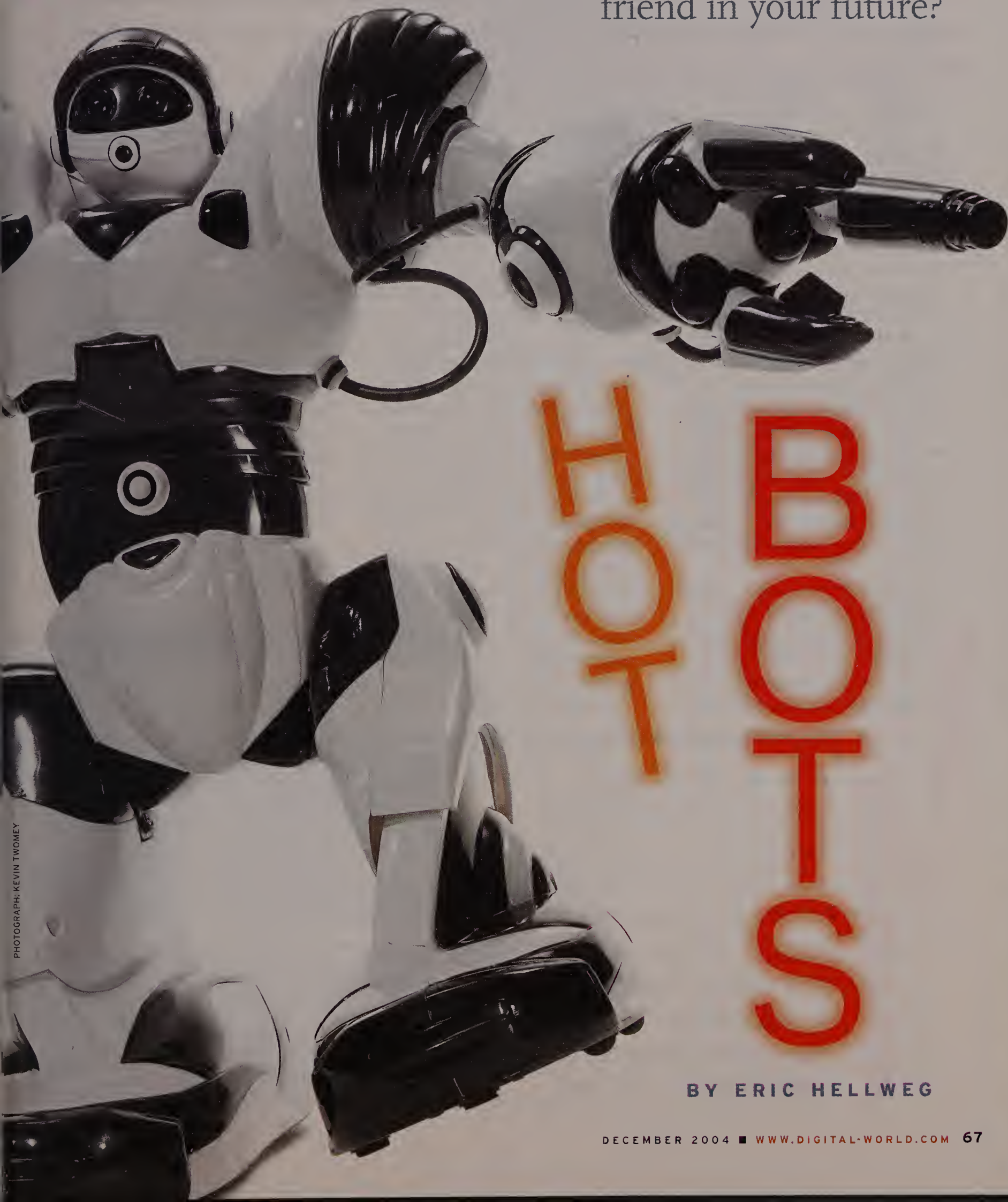
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From corporate labs to neighborhood garages, personal robots are finally fact, not fiction. Is there a mechanical friend in your future?



HOT BOOTS

BY ERIC HELLWEG

Mark Tilden likes to brag that he commands the world's largest private robot army. Don't be alarmed, though—these robots don't fight. They prefer to dance and burp.

TILDEN, A ROBOTICS PHYSICIST at WowWee toys, is no Dr. Moreau or Dr. Evil, but he loves the image—and has been called a mad scientist more than once. His creation is the wildly popular Robosapien humanoid robot toy. At a constantly humming 3-acre factory nestled deep within southern China's Guangdong province, workers assemble 5000 of Tilden's 14-inch robots every day. WowWee sold 2 million of the black-and-white creatures this year.

Tilden's boast aside, there's no denying that a robotics reformation is under way. After years of false starts and overpriced, overhyped flops, we're finally seeing robots you might actually want to buy. Robosapien has a repertoire of 67 moves, including throwing a ball and dancing, and is completely programmable. Total cost: \$99.

"He's not a devolved human," Tilden insists. "He's an evolved robot. That burps." The burps are just a little "guy humor" that Tilden programmed. An active community of Robosapien hackers goes even fur-

ther, sharing modification tips online.

Jamie Samans, a 34-year-old consultant for high-end home theater installations in the Seattle area, posts photos of improvements he's made to his own Robosapien. He's outfitted it with a Webcam and given it infrared capabilities so that when he's out, he can control the robot remotely through his PC. "My dogs absolutely hate it," he says.

From dancing to dog-watching, robots are learning tricks unimaginable just five years ago. Ask anyone involved in robotics to describe the industry today, and you hear comparisons to the PC industry in the late 1970s and to the beginning of modern aviation.

The possibilities for intelligent automations reach beyond toys or the desire to simplify housework—an aspiration that already sells plenty of iRobot Roomba vacuum cleaners. Epson just introduced a tiny flying robot with helicopter-like rotors; a spokesperson says that possible applications include flying them around inside mines to survey the scene.

And due to recent reductions in the

price of processors, sensor technology, GPS gear, and other robotics essentials, companies aren't the only ones creating compelling robots. Robot hobbyists are building machines that rival those from academic research labs.

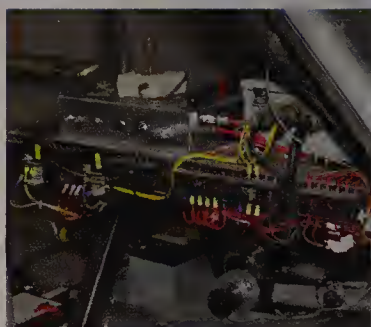
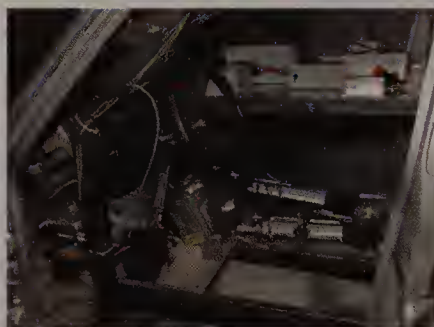
A JETSON-WORTHY JEEP

"THERE ARE A LOT of new ideas occurring today because it's so cheap to try them out," says Larry Barello, president of the Seattle Robotic Society, one of the most active U.S. robot groups, with more than 1500 amateur members who meet regularly, sponsor competitions, and visit local schools. "You can put together a sophisticated robot lab for a couple hundred bucks now, which was unheard of a few years ago."

What kind of ideas has that freedom inspired? Consider this: The Department of Defense faces a congressional mandate that one-third of its vehicles drive themselves by 2010. In 2003, not satisfied with its own progress, DARPA, the government-funded defense research facility, opened a robot design contest, the Grand Chal-

ARCTIC TORTOISE

The gizmos and gadgetry inside this modified 1992 Jeep may not leave much elbow room for human passengers, but that's okay—it can drive itself. A team in Alaska is readying it for a grueling desert challenge in 2005.



AIBO

Move over, Lassie: Sony's Aibo does useful tricks such as capturing sounds and images while you're away from home. And he wags, walks, and talks (in a nondescript male voice).



allenge, to the public. Vying for a \$1 million prize, 106 teams signed up that year to try to create a robotic vehicle that could travel 150 miles through the desert in less than 10 hours. After the qualifying rounds, 16 teams entered the race, but none of their creations completed it. Undaunted, DARPA has scheduled Grand Challenge 2 for October 2005 and upped the prize to \$2 million. Applications are pouring in.

"The prize is important, but a lot of peo-

ple want to do this for the bragging rights," says Ron Kurjanowicz, DARPA's chief of staff and the contest's program manager. "The picture taken of the winning team will be the photograph that enters the history books."

Rick Ruhkick, an engineering technician at the Geophysical Institute at the University of Alaska in Fairbanks, wants to be in that photo. His team of volunteers, Arctic Tortoise, wanted to enter the first challenge but failed to complete its vehicle—a tricked-out 1992 Jeep Cherokee—on time. Arctic Tortoise is well on its way now though, Ruhkick says, thanks to recent improvements made to the Jeep's sensors and electronic and mechanical gear. Of course, training in Alaska for a desert robot run presents its own challenges. "We don't have much desert up here," he says.

A self-driving Jeep Cherokee is a good ways down the road from society's initial fascination with automatons. Though the exact origins of robotics are debatable, many enthusiasts point to Czechoslovakian playwright Karel Capek's 1920 play, *Rossum's Universal Robots* (RUR), where the term *robot* first occurred. The word derives from the Czech *robota*, which means *tedious labor*. In the play, a young woman travels to a remote island factory owned by a mad-scientist type who has

created a fleet of robots to do his bidding. Other people claim

that Isaac Asimov's seminal *Runaround*, in which Asimov spelled out the Three Laws of Robotics, was the flashpoint.

Popular culture has not lost its fascination with (or trepidation about) robots, as evidenced by last summer's movies *I, Robot* and *The Stepford Wives*.

ROBOT REVIVAL

TODAY'S HOME robotics renaissance can be traced more recently to Sony's Aibo. Debuting in 1999, Aibo was one of the first toys to combine some cool talents—like the abilities to follow you around the house and to learn commands—with a sleek design. At \$2500, however, the dogbot wasn't for everyone. In the United States, most Aibo buyers were geeks interested in making their own modifications. (In Japan, Sony says that Aibo serves as a companion for the elderly.) Sony has updated the wired terrier three times. The newest, \$1900 model responds to some 100 commands, has wireless LAN capabilities, and sees objects more accurately for better navigation.

About a year ago, Sony introduced a new robot called Quest for Curiosity, or Qrio for short. Qrio is not on the market, and Sony has no plans to sell it anytime soon, but the company regularly



demonstrates the walking robot at events. So far Qrio has conducted the Tokyo Philharmonic, interviewed Sony's CEO at an annual meeting, and thrown the first pitch at a baseball game.

For now, though, Qrio remains inaccessible to everyone except for a few Sony engineers—a disappointment for anyone who longs to play with the fun toys too.

ROBOHACKERS UNITED

THIS SENSE OF FRUSTRATION has led many robotics fans to pin their hopes on people like WowWee's Tilden and Helen Greiner, the chairwoman of the board and cofounder of IRobot, which makes the \$200 Roomba vacuum-cleaning robot. Both entrepreneurs are committed to marketing cutting-edge, hackable robots for a fraction of the cost of the Aibo. Roomba, which debuted in September 2002, is the world's biggest-selling domestic-assistant robot. IRobot has sold more than 500,000 units to date.

Greiner won't reveal what the next Roomba will do, but she has clear ideas about future cousins. "Think about mowing, mopping, cleaning bathtubs, dusting, watering plants, washing windows, cleaning toilets—the list goes on."

Roomba and Robosapien endeared themselves to the robotics community by encouraging purchasers to create other, unintended uses for them. A sizable subculture has sprung up around Roomba, with owners "teaching" the devices to water plants, deliver drinks, and act as

security sentinels while totting Webcams.

"Letting people get inside and repurpose an existing robot is a great trend," says Mitchel Resnick, a professor at the MIT Media Lab and co-inventor of Lego Mindstorms, a popular version of Lego toys that enables users to build robotlike creatures. "I'd like to see that become more mainstream."

Robosapien hackers are making modifications of many kinds—removing the robot's hands and attaching other appendages, swapping LED lights for infrareds, and dozens more. There's even a Hack-a-Sapien contest, sponsored by Servo, a robotics magazine.

GARAGE GURUS

SOME ENTHUSIASTS aren't content to alter someone else's creation. They want to make their own.

David Anderson, director of the Geophysical Imaging Laboratory at Southern Methodist University in Dallas, got hooked on robots in the 1980s when he built Lego robotics toys with his sons. Today he's one of the top designers in the Dallas Personal Robotics Group, according to the club's president, John Drummond. "He's been making the coolest robots for a long time," Drummond says.

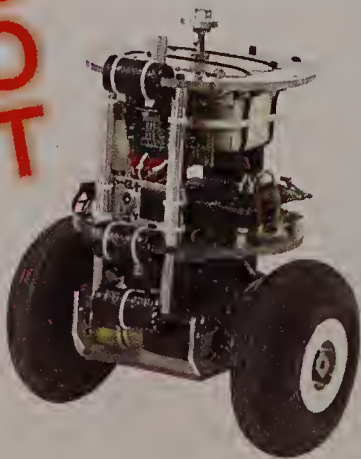
YOUNG ROBOTICS
experts Genevieve Picard (left) and Gabrielle Lemieux of the Titan Robotics Club with Atlas—a homemade bot that can shuttle balls from one basket to another.



Anderson's last robot project, the SR04, a squat, three-wheeled device, autonomously maneuvers through courses and uses a grabber arm to complete an objective such as picking up a soda can.

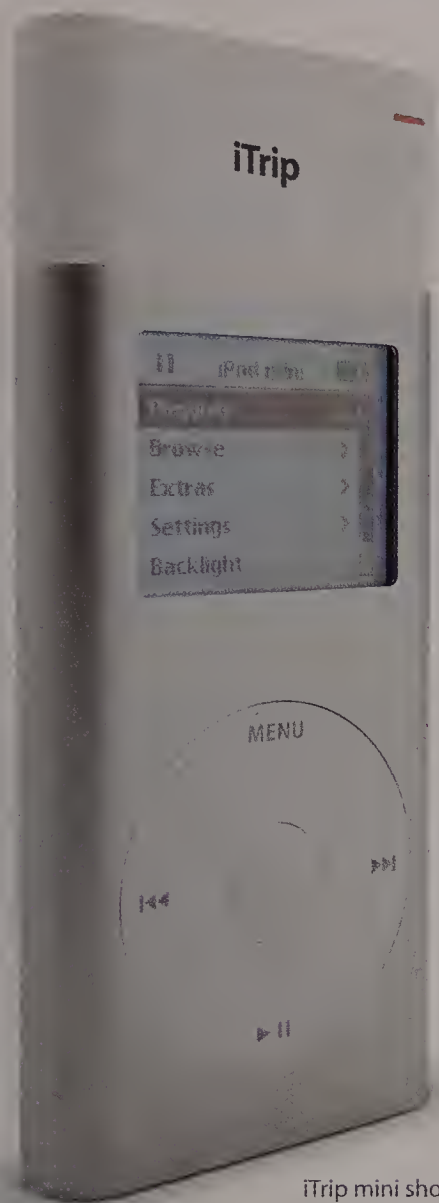
Anderson is currently working on making robots that are more adaptable to their environment. Success in this endeavor represents a Holy Grail of sorts in the robotics community, and it is essentially what DARPA is aiming for with its Grand Challenge. Typically, most robots function only in very controlled situations. An unplanned variable thrown into a

NBOT



"I want to move robots...into the real world," says Dallas hobbyist David Anderson, a veteran robot designer. Consider his NBot a Sport Utility Robot: The two-wheeled, self-balancing bot has tackled steep Rocky Mountain roads.

PHOTOGRAPH: RICK DAHMS (TOP)



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robot's path—a carelessly discarded shoe, say—can wreck the robot's game plan. "I want to move robots off the contest course and into the real world," Anderson says.

His current project—a two-wheeled, self-balancing mobile unit called the NBot—has had some success in navigating unfamiliar terrain and was even able to scoot itself safely down a steep access road in the Rocky Mountains. Anderson hopes that NBot may move the robotics community closer to the creation of autonomous and sturdy two-wheeled vehicles that run outside the lab.

Anderson, male and middle-aged, is part of the robotics old guard. Seattle Robotics Society members Ryan Wistort, Genevieve Picard, and Gabrielle Lemieux represent a new wave of enthusiasts.

Wistort, a 21-year-old junior at the University of Washington, got into robotics when he was 15. His crowning achievement to date is Charlotte, a spiderlike device that earned him a prize at the 2002 Intel Science and Engineering Fair. He's currently working on a robot that will travel underground to inspect power cables for breaks and signs of wear.

Picard, 16, and Lemieux, 17, help run the Titan Robotics Club at International High School in Bellevue, Washington. The club has racked up awards in regional and nationwide competitions. (Membership typically floats at around 30 members—not bad for a high school with an enrollment of 250 students.)

Each year the team works on an entry for a nationwide student robotics competition, in response to a task assigned by the contest's organizing committee. The most recent challenge involved building a robot that could pick up balls from one basket, transport them across the room, and deposit them in another basket.

Picard says her interest in robotics grew from a longstanding involvement with technology. For her, robotics was "an egg to be cracked," she says. "Once I saw the robotics club, it opened everything up."

ROBOT STARS MADE BETTER

BEFORE ANY OF US HAD ROBOTS in our homes, we saw them at the movies or on television. But those robot celebs weren't perfect. Here's what we'd change about three of pop culture's most beloved machines.

C-3PO

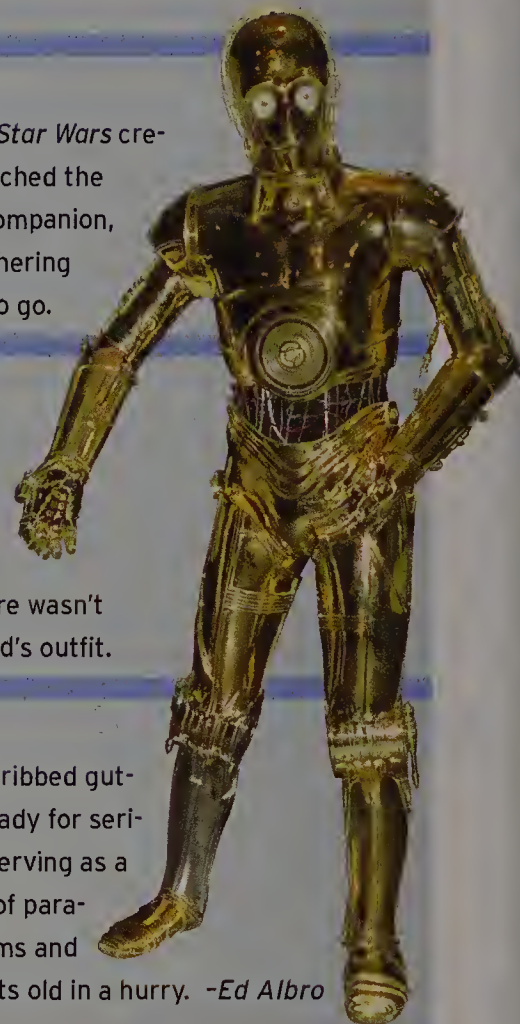
One of cinema's most anthropomorphic robots, this *Star Wars* creation possessed many advanced skills but never matched the good looks or spunk of his waste-basket-on-wheels companion, R2-D2. **What we'd reprogram:** We can forgive the dithering cowardice. But that supercilious British accent has to go.

ROSIE THE ROBOT

The *Jetsons'* always-on-duty automated maid could vacuum, cook, and answer the door. She even taught Elroy to shoot hoops—plus she looked tidy in her built-in apron. **What we'd reprogram:** Rosie was ever efficient and thorough, but let's face it, her figure wasn't exactly what most men hoped to see in a French maid's outfit.

ROBOT B9

With a barrel chest like a slot machine and arms like ribbed gutter tubing, the robot on TV's *Lost in Space* looked ready for serious wet/dry vacuum work. But he mostly ended up serving as a mechanized babysitter. **What we'd reprogram:** A bit of paranoia can be a good thing. But when a bot flails its arms and yells "Danger! Danger!" every half-hour, the thrill gets old in a hurry. —Ed Albro



Are these young women worried about being labeled geeks? Definitely not. "My sisters always tease me about how nerdy I am," Lemieux says. "But I'm totally proud of it, so it doesn't bother me."

YOUR ROBOTIC FUTURE

WHERE WILL ALL THIS experimentation lead? Various groups are working on home health-care robots that could assist the elderly by performing basic chores and providing companionship, says Ronald Arkin, Ph.D., a professor at Georgia Institute of Technology in Atlanta.

To that end, Arkin's robotics research delves into everything from sensor technology and software to the psychological implications of man's interaction with evolved machines. "It's not enough to

have great robots," Arkin says. "They have to work together with people."

It's hard not to get intoxicated imagining a robotic future, but scientists such as Arkin caution against getting carried away. Recent gains achieved by the robot community are incremental, not exponential. Still, robots are undeniably claiming a bigger place in the world, even if the robots themselves are small—for now.

Tilden says that seeing a 24-foot inflatable Robosapien on display at Macy's flagship New York store gave him new ambitions for his 14-inch creation. "We have to build something larger," he muses. "But at least this one can date Barbie." ■

Eric Hellweg is a freelance writer in Cambridge, Massachusetts.

THE Little Player That Could

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CONSUMERS EXPECT INNOVATION and value from market leaders—nothing less. And that is just what buyers will get in Apex Digital, Inc.'s new E2go Personal Media Player, a device that is simply like no other. In short, the E2go blows past everything else on the market in terms of value, ease of use, and exceptional audio and video features. It is the future of portable entertainment, and only Apex is bringing consumers the future right now.

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Get this: The E2go records and encodes video on its own, with no intermediary device needed, digitizing and saving the recordings directly to the hard disk. The E2go's ultra-compact 1.8" hard disk drive minimizes weight, noise, and heat generation, while a snappy 3.5" LCD screen delivers crisp images. For audio, the E2go produces sound either through high-quality stereo earphones or its built-in speaker.

Another feature setting the E2go apart from all other media players is its ability to record and encode non-copy-protected video from standard video sources, like VCRs, PVRs, DVDs, and camcorders. This remarkable device also records voice notes, plays back images as a slide show with audio, and outputs video to a standard TV via an "AV out" connection. This means that



» **The E2go Personal Media Player: a huge step forward for mobile consumers.**

commuters, travelers, or carpoolers can use the E2go's recording capabilities to catch up on their TV viewing.

Transferring files to or from the E2go and a desktop or laptop computer is a breeze with its USB 2.0 connection. With the USB connection and the massive 20-GB hard drive, the E2go can double as a portable hard drive easily taken on the road. Another superb feature of the E2go is its user-removable/replaceable, rechargeable Li-Ion battery, which is as easy to change as the batteries in a digital camera. Other players require users to actually ship the player back to the factory when the time comes for a new battery (which any of these players will ultimately need).

Apex has a vision of a future rich in affordable, feature-laden entertainment products. The innovative E2go is an extension of that drive to give consumers the options and control they want over how and where they choose to watch or listen to their recorded media content.

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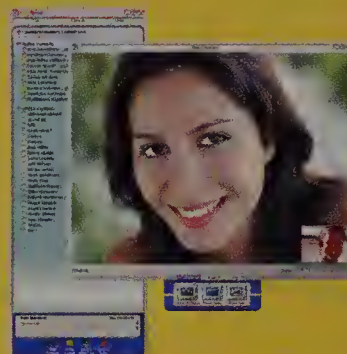
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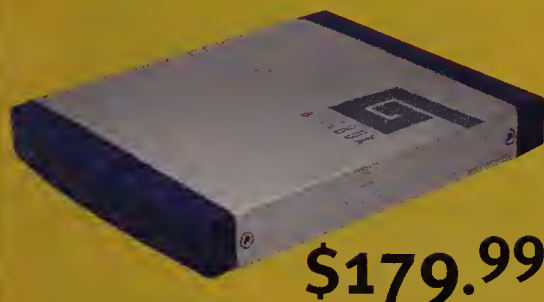
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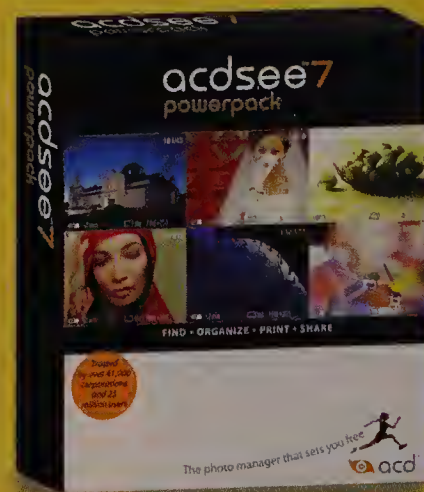
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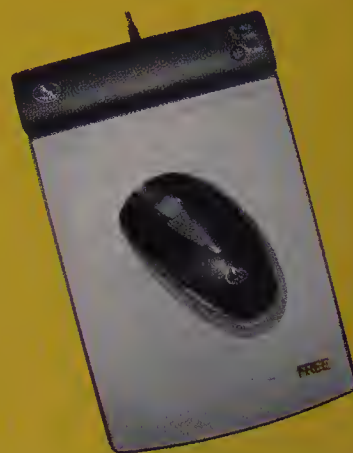
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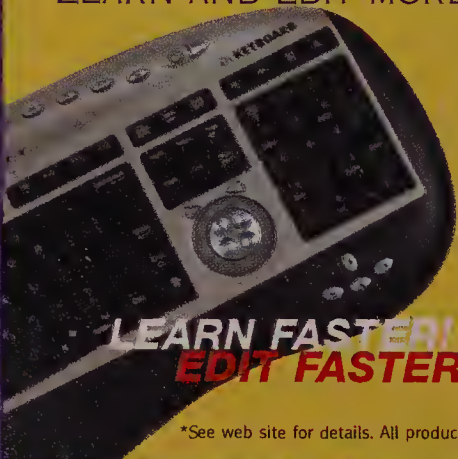
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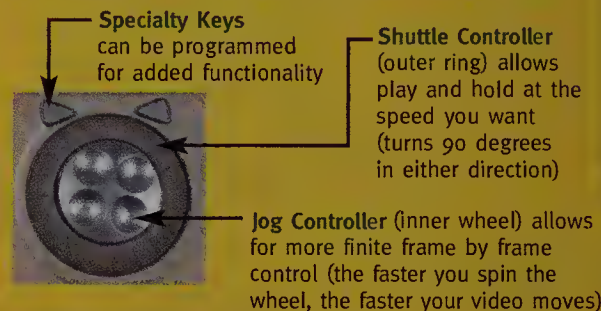
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High-Res Music to Your Ears

Super Audio CDs and DVD-Audio discs sound superb with the latest hardware. BY MICHAEL DESMOND

FOR A FEW YEARS NOW, recording companies have been issuing a small number of new releases in high-resolution audio formats—Super Audio CD (SACD) and DVD-Audio—while releasing a much larger number of remixed classics. In time, these discs could shoulder aside mere audio CDs by offering significantly better music quality, but you'll probably never hear high-res audio on an iPod.

Most high-resolution audio discs cost about the same as their CD counterparts; rarer titles may cost more. Both formats use 4.7GB DVD media and are superior to CDs in nearly all respects, with greater bit depth (typically 24 bits versus 16 bits for CDs), higher sampling rates (96 kHz or 192 kHz, versus 44.1 kHz), and more speaker channels (5.1-channel surround sound versus two-channel stereo). I've listened to this stuff, and it is impressive.

Because some DVD-Audio releases have separate high-resolution DTS Audio tracks as well, you may be able to play them in an older DVD player that doesn't support DVD-Audio or SACD. Just look for a DTS logo on the front of the player.

But why do we need yet another music

format? After all, in theory, sampling audio at 44.1 kHz (or 44,100 times per second) and storing it as 16-bit data provides more aural detail than human ears can discern. In fact, though, it still comes nowhere close to faithfully reproduced music. One problem: High-frequency signals often get clipped on audio CDs, and this robs the music of fidelity at the upper end of the audible wave spectrum.

Specifications and figures are nice, but the listener's ears are the final arbiters. When I dropped a DVD-Audio disc containing Marvin Gaye's "Let's Get It On" into my home theater setup, I felt the music as much as I heard it. Sting's "Desert Rose" on his *Brand New Day* album is hypnotic. Music and voices swirl and wash about you, providing a new per-

spective on songs you thought you knew.

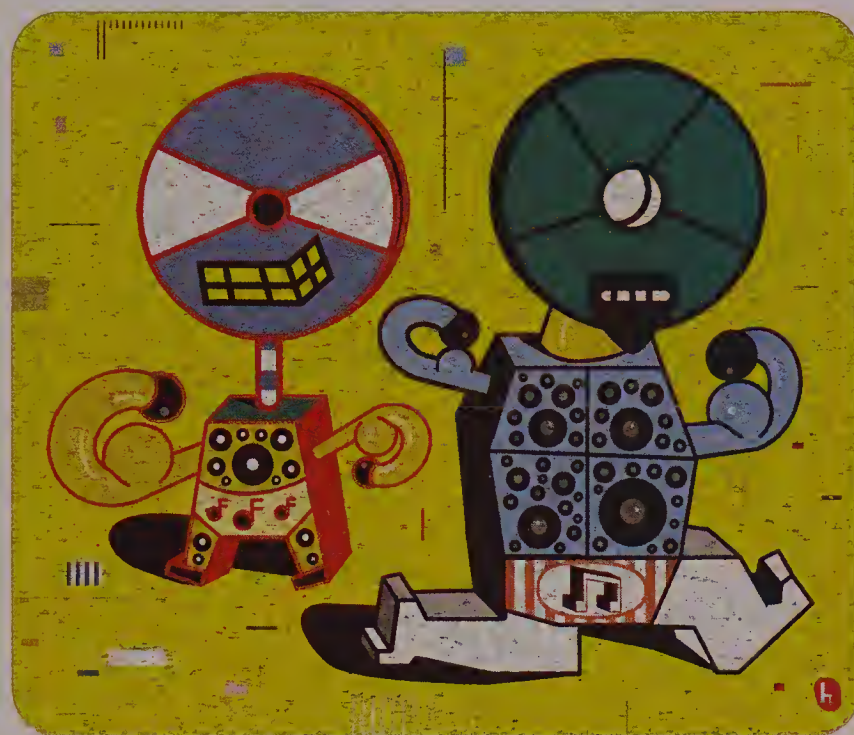
Part of the magic comes from the addition of surround sound to these discs. Even on remixed DVD-Audio discs like the Eagles' *Hotel California* and SACDs like Pink Floyd's *Dark Side of the Moon*, you're in the center of the band.

Neal Breitbarth, a longtime studio producer and now a manager with audio equipment maker Digidesign, says that what he's heard from SACD and DVD-Audio impresses him.

"It has a lot of depth to it that you won't find in CDs," Breitbarth says. "The thing you really notice is the sound at the high end [of the spectrum]. You will notice the difference, if you listen to an MP3 versus a CD versus a Super Audio CD."

HIGH-RES HARDWARE

I CHECKED OUT two DVD players that can handle both high-resolution discs—the Pioneer DV-578A (dwfind.com/44844) and the Yamaha DVD-S1500 (dwfind.com/44788)—and liked what I heard. Both can read DVD video as



Mike's Rants and Raves

High Definition Redux Now that HDTV is here, it's high time I start pushing the next big thing, don't you think? Ultra-high-definition video (UHDV), demonstrated by Japanese broadcasting company NHK, produces video at 7680 by 4320 pixels, for a total of about 33 million pixels per frame. That's up from about 2.2 million pixels in a typical HDTV picture; a minute of this stuff requires nearly 200GB of storage. If you've just purchased an HDTV set, don't panic. UHDV products aren't likely to emerge for decades.

Home Movies in HD? High-def is taking the TV world by storm; movies of your peeps and pets look like the next stop: Sony's HDR-FX1 camcorder captures them all in 1080i resolution. It's neither light (4.5 pounds) nor cheap (\$3700), but it's sure to be a hit with war correspondents, documentarians, and struggling indie filmmakers. Remember, Sony introduced the first MiniDV camcorder in 1995, and the format was a standard by 2000. Could sub-\$1000 HD-capable camcorders be coming soon?

well as the entire range of CD and DVD rewritable disc formats, too. And since both drives also support Dolby Digital and DTS audio, they can dish out the immersive surround sound found on DVD videos. In the informal sessions I spent listening to a 5.1-speaker setup powered by a Yamaha RX-V650 receiver, both players produced music that rose head and shoulders above that of standard audio CDs.

The Pioneer DV-578A is sleek and compact. But I was frustrated by its uninformative front-panel interface, which forced me to turn on the television to do simple things like switch SACD audio modes and turn on surround sound. Still, for \$130, you can spin every medium this side of a pepperoni pizza.

The Yamaha DVD-S1500 is a larger, more expensive unit (about \$400) that should have even more appeal to music enthusiasts. Though its front-panel LCD is cramped, the display shows enough to let you get most tasks done without having to resort to the TV. I also thought that the DVD-S1500 provided somewhat greater clarity than the DV-578A when playing some SACD titles.

For video playback, both drives offer high-quality, progressive-scan video output over component connections. Regret-

HARDWARE FOR HIGH-RES: Pioneer's DV-578A and Yamaha's DVD-S1500 help you add high-resolution audio to your home theater.

tably, however, neither offers DVI or HDMI connections, an important and convenient way to move high-resolution audio and video among components.

WILL IT PLAY IN POUGHKEEPSIE?

DESPITE THEIR IMPRESSIVE audio quality, SACD and DVD-Audio face an uphill climb. Recording companies are promoting better-than-CD quality music at a time when most consumers are happily compressing tunes to MP3 format. What's more, you can't listen to high-resolution audio on just any equipment. You need a home theater, computer, or automobile (rare) equipped with both a compatible player and a 5.1-channel speaker setup.

Another issue: You can't rip DVD-Audio or SACD music to a portable audio format. Yes, many SACD titles offer a standard-resolution, CD-compatible set

of tracks on a second layer of the disc—and I could rip these just as I could any regular CD—but the good stuff remains firmly locked up.

More troubling, many CD players can't play DVD-Audio discs at all. A new disc format backed by several large record companies may resolve that problem. Called DualDisc, the format puts a standard audio CD on one face of the disc and a high-resolution DVD-Audio recording on the other. It's a neat idea that should allow DVD-Audio to match SACD's compatibility. The new discs should begin



MANY HIGH-RES discs remix older titles, like Beck's *Sea Change*, with surround sound.



HIGH-RES AUDIO FOR AUTOS

IF YOU WANT TO LISTEN to high-resolution audio on the road, you have two options: Buy one of the few automobiles that emerge from the factory already able to play them, or buy an aftermarket system and have it installed.

Rob Enderle, a technology analyst based in San Jose, California, owns an Infiniti FX45, which has built-in surround sound and a DVD player that lets him play DVD-Audios that have DTS tracks (it won't play DVD-Audio discs without DTS tracks). But most car-based DVD video players won't display video unless the vehicle is stationary. As a result, even discs with DTS audio tracks won't respond to the play controls on Enderle's dashboard.

"I can't navigate the damn disc. It will play it, but the controls for any DVD you put in the system go to the [second LCD in the back seat]," says Enderle. "For starting play [while driving], the only way I can do it is to grab the DVD remote control and reach behind my head and point it at the rear seat display, which I can't see."

Pioneer's aftermarket, \$1500 AVH-P7500DVD plays true DVD-Audio discs. But you have to factor in the price of additional speakers and of installation.

appearing in the first quarter of next year.

SACD isn't sitting still. There's already talk of an SACD 2.0 spec, said to add video and photo handling to the mix (many DVD-Audio discs already have this capability). There's no word yet on whether it might render today's SACD-savvy drives obsolete. And both camps

face an emerging issue: Artists are demanding royalties for each instance of a track on discs that contain multiple iterations of their work. The various sides were still negotiating at press time. ■

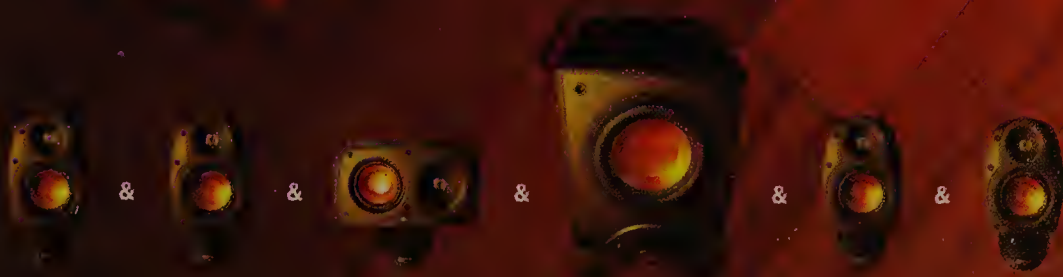
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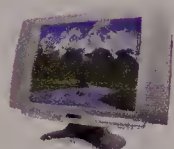
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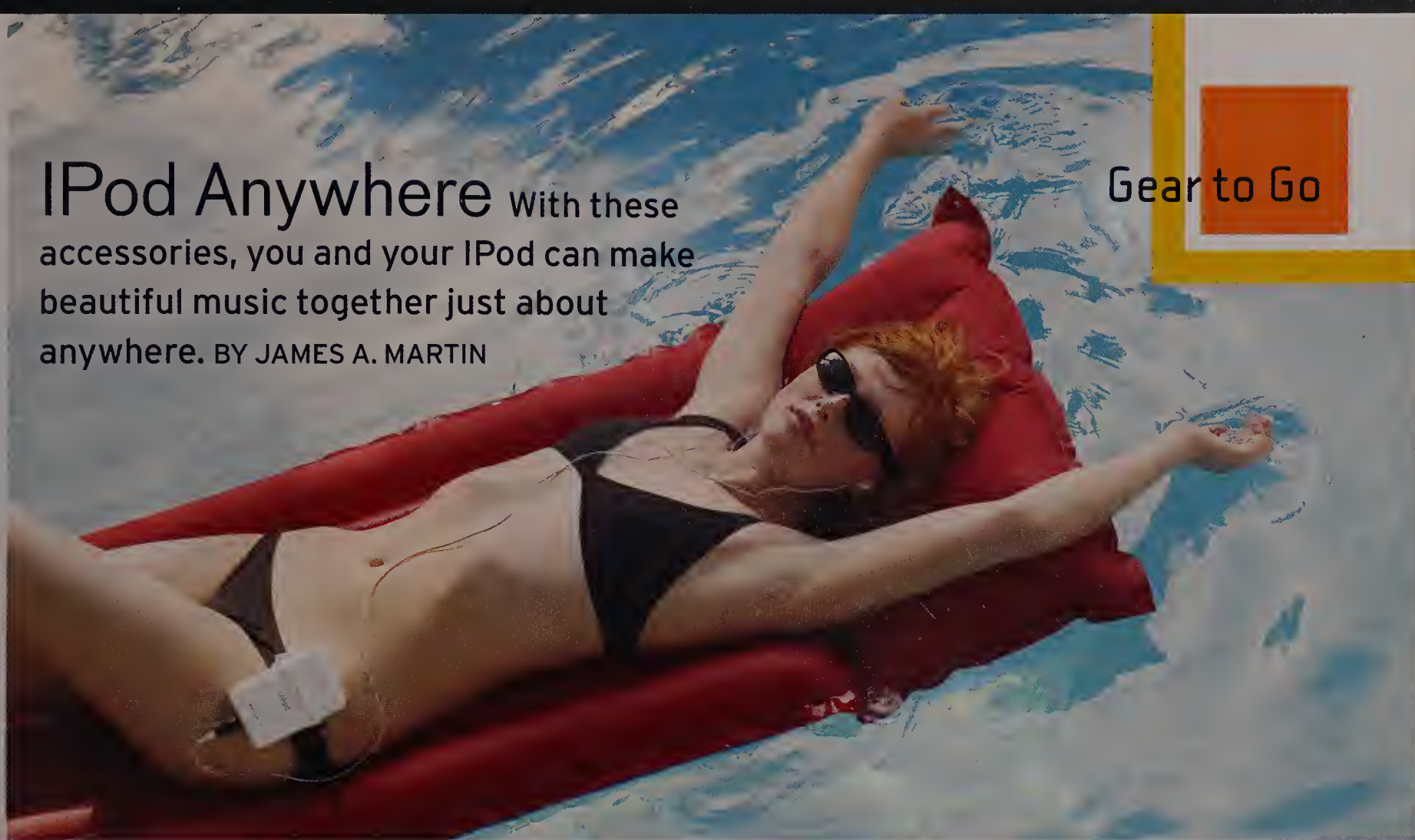
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IPod Anywhere

With these accessories, you and your IPod can make beautiful music together just about anywhere. BY JAMES A. MARTIN



"I'M GOING SWIMMING next week with my IPod," I announced to my friend Scott.

Scott frowned. "That's crazy. You can't swim with an IPod."

"Actually," I said, "I can." I explained that one of the items I would be testing for this column on IPod accessories was the LiliPod, an IPod case that its maker claims is watertight.

"Can't wait to hear how *that* goes," Scott said with a snicker.

Don't tell Scott, but I was pretty nervous about subjecting my favorite gadget to trial by dunking. So I decided that, of the five IPod accessories I planned to test, the LiliPod would definitely come last.

Until then, my IPod and I had a mission: to see whether I could enjoy tunes in various settings using cool, offbeat IPod accessories—and no headphones. Here's where I went and what I tried.

At an impromptu party: Playing music on the go with buddies used to mean lugging a boom box. Felicidade's **Groove Bag Triplet Speaker Purse for IPod** (\$145, dwfind.com/44516) updates the concept with what is, in essence, a combination boom box/clutch bag.

One side of the Groove Bag has a see-through slot in between its two plastic-covered speakers. Drop your IPod into the slot, hook the speakers to the IPod's mini-jack, and you have a party.

The speakers' tone is a bit thin, and the volume is kinda weak. But when I paired the Groove Bag with **Boostaroo** (dwfind.com/44518), a \$30 battery-operated amplifier and headphone splitter, the volume perked up. Still, to work the IPod controls, you have to take it out of the bag. And to quote Scott: "Dude, it's a *purse*."

On the highway: I like to sing along (badly) to my favorite songs while driving. Lots of devices can pump your IPod tunes into a car stereo, but none is as elegant as Griffin Technology's FM transmitters—the **ITrip** (\$35, dwfind.com/44520) and the **ITrip Mini** (\$40, dwfind.com/44522).

The white ITrips nicely match the contours of Apple's music players. Audio

quality is good—though as with any radio broadcast, interference and static can creep in. But unlike some FM transmitters for MP3 players, the ITrips let you choose from among dozens of frequencies. As long as the default frequency (87.9 FM) is free of interference, using either ITrip is easy. Tuning in to other radio frequencies, however, requires several steps. The ITrip comes with a CD that installs a playlist of radio frequencies onto your IPod. To switch frequencies, you must call up the ITrip's Playlist on your IPod and then scroll through the frequencies. So if the default station isn't working, pull the car over and twiddle until you tune in a clear channel. ▶



Jim's Travel Log

IPod Continued Three more IPod essentials I'd pack in my suitcase: Griffin Technology's **EarJams** (\$15, dwfind.com/44532), which snap onto the IPod's earbuds and make them stay put in my ears; Belkin's **Backup Battery Pack** (\$60, dwfind.com/44534), to keep the IPod going for up to 15 hours after its internal battery poops out; and **ITalk** (\$40, dwfind.com/44536), which turns the IPod into a pretty good voice recorder.

Cell Phone Shock Cell phones that moonlight as digital cameras, PDAs, Internet

appliances, and music players are so 5 minutes ago. The latest cell phones can show broadcast TV (Samsung's MM-A700); capture video (the LG Electronics VX7000); work on Wi-Fi, cellular, and Bluetooth wireless networks (HP's IPaq H6315); and pack a built-in hard drive (Samsung's SPH-V5400). Given these developments, a combination cell phone/defibrillator should be announced right about...*now*. But what about a cell phone that simply allows me to talk to someone over a stable, clear connection?



ACCESSORIZE OR DIE: The Felicidade Groove Bag Triplet Speaker Purse

(rear), the Griffin iTrip Mini (left), and the LiliPod.

On the living-room sofa: Three years ago, I bought a six-CD changer for my living-room stereo system. One year later, I bought my first iPod. Guess which one is currently gathering dust?

Of course, unlike the CD changer, my iPod had no remote control, but Ten Technology's **NaviPod** (\$50, dwfind.com/44524) fills the gap nicely. This disc-shaped infrared remote is easy to use: Plug its receiver into the iPod's headphone jack, connect the iPod to your stereo via the iPod's docking cradle or mini-jack, and you're ready to rock. The remote has five control buttons—play, fast forward, and so on—but it lacks an LCD, so it won't let you switch playlists or browse songs.

In bed: When I told my acupuncturist of my frequent insomnia, she said, "Get rid of your alarm clock." So I unplugged the bedside clock radio, with its huge, anxiety-inducing digital time display. In its place went my iPod and Altec Lansing's **InMotion IM3** (\$180, dwfind.com/44526), a portable speaker set/recharging dock for iPods. (To work, iPods' native alarm clock feature relies on external speakers or, uncomfortably, headphones.)

Like its still-available predecessor, the \$150 InMotion, the IM3 folds up easily and compactly for travel, and when unfolded it produces rich, room-filling sound. Unlike the InMotion, the IM3 comes with a remote control, international power plug adapters, and a padded carrying bag. Though I still struggle with

insomnia, at least I fall asleep every night to beautiful music, thanks to the IM3.

Under water: As my pool date neared, I grew worried that my iPod would end up, well, sloshed. (No wonder I have insomnia.) So before the big day, I inserted a notepad in the \$40 **LiliPod** (dwfind.com/44528) and held it under running water for several minutes. Impressively, the note pad emerged as dry as a turkey sandwich without mayonnaise.

At the pool, I started the playlist I'd created for the occasion (including "Under the Sea" from *The Little Mermaid*). I plugged the iPod into the LiliPod's internal earphone jack, closed the LiliPod securely, and attached a pair of waterproof earphones to the LiliPod's external connector. Then I clipped the LiliPod to my Speedo, took a deep breath, and slipped gently into the pool.

How odd it was, to have music instead of water flooding my ears. Not surprisingly, the sound was a bit muted underwater. But overall, the quality was pretty good. I listened to three songs while lap swimming, and when I got out of the pool and opened the LiliPod, I found not one droplet of water on my iPod.

Swimming aside, the LiliPod would be great for protecting your iPod when snow-skiing, beach-combing or -blanketing, raft-floating in a pool, or working or playing anywhere water damage might occur. Still, I won't be taking my iPod along the next time I swim laps. The earbuds I used

WHEN WORDS FAIL

I WALK into a Berlin restaurant for breakfast, and the host hands me a menu in German. "Do you have an English menu?" I ask hopefully, as I know only a few words in Deutsche. He smiles but shrugs his shoulders and disappears.

Time to whip out the **Aim High Talking TR2203** (\$195), a handheld audible language translator that I mentioned in my column last month. The gadget has a database of 200,000 words and 23,000 phrases in ten languages. It will even speak for me, in German, via its small built-in speaker. All I do is select the phrases I need (they're listed in categories, under practical headings such as "meals"); or I can look up words in the device's database and then press a button, and—faster than you can say "Götterdämmerung"—I'm a polyglot.

Regrettably, the TR2203's database includes only some of the menu items that I type in. Left to my own devices, I demonstrate the breaking and scrambling of eggs for the waiter. Fortunately,

she understands my gesticulations, and she also knows the English word "cheese."

On the other hand, the TR2203 is helpful for learning to pronounce foreign words before you travel. But practice at home:

Its speaker is too quiet to hear in a restaurant or other noisy place.

Ultimately, miming my food requests is far more entertaining all around than relying on a gadget to do the talking—though I draw the line at impersonating a free-range chicken. You can check out the TR2203 at dwfind.com/43880.



with it popped out of my ears several times, and the earphone cord frustrated my freestyle. But that's okay. The pool may be the only place I go that's free of phone calls, e-mail, and other people. It's just me, the water, and sweet silence. ■

James A. Martin writes PC World's *Mobile Computing* newsletter.

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No-Hassle Returns

If it doesn't work, it doesn't fit, or you don't want it, can you take it back? Find out before you buy. BY ROBERTA FURGER

consumer electronics items isn't as simple or customer friendly as it should be. Edgar Dworsky, founder of Consumer World (www.consumerworld.org), prepares an annual audit of retailers' return policies. Policies are getting more strict and more complicated, Dworsky says. "Gone are the days when everything could be returned in 30 days," he says. "Stores are now categorizing different types of goods, giving each class its own set of restrictions."

That means you should check the return policy that accompanies every order, paying particular attention to four key details.

You can look, but can you touch? What's the first thing you do when you get a new toy, electronic or otherwise? You open it, of course. That simple act can cost you plenty if you later decide to return the item. Circuit City and Best Buy (among others) levy a 15 percent restocking fee on all digital cameras, camcorders, and radar detectors (and on many computer products) if the box is opened. Target.com charges 15 percent on many electronics, even if you don't break the seal. Office Depot forbids returns of LCD projectors, PDAs, or digital cameras, opened or not.

Online retailers Crutchfield and Amazon.com never charge exorbitant fees for returns of electronics purchases, earning them serious bonus points when I do my consumer electronics shopping.

Count the days. Every retailer imposes a time limit on returns. Costco is one of the most generous, allowing a full six months on many items. Several retailers—Best Buy, Circuit City, and Staples, for example—limit the return time on camcorders, digital cameras, and several computer items to 14 days (though they still grant

30 days' grace on TVs, stereo equipment, and most other electronics).

With most online retailers, the clock doesn't start ticking until you have the item in hand. But Buy.com starts counting the days of its 20-day return policy as soon as an item leaves its warehouse. And you can't just call within the 20 days to get a Return Merchandise Authorization (RMA) number. Instead, you have to ship the package within that time.

Big screen, big restrictions. Big-screen TVs may mean big hassles on returns. Amazon and Buy.com don't allow returns of TVs with 27-inch or larger screens—even if they don't work. Once you accept delivery, your only option for dealing with a TV that doesn't work or that has a bad picture is to call the manufacturer and ask it to correct the problem. My advice: Spend your big-screen dollars with a brick-and-mortar retailer—or at least, with an online retailer who will be there for you after the delivery truck pulls away.

To ship or not to ship? Crutchfield pays the shipping charges on returned items, no questions asked (but that policy doesn't apply to TVs larger than 24 inches). Most online retailers who also have traditional store locations allow customers to return items bought online to one of their retail stores—in fact, they encourage it. If there isn't a store near you or if you purchased from a Web-only retailer, be sure to follow the seller's return procedures to the letter. One wrong move and you'll be trying to unload the item on eBay.

And remember to save your receipt. ■

Digital World Contributing Editor Roberta Furger writes and shops from her home in Oakland, California.



MANY PEOPLE SHOP BY PRICE. Others look for retailers with very knowledgeable sales staff. But I shop by return policies.

At first blush, my priorities may seem a little out of whack. But over the years, I've spent enough money in return shipping charges to buy an iPod Mini—accessories and all—and I've probably wasted twice that amount by failing to return items within the allotted time. Add the time I've frittered away repacking boxes, standing in line at the post office, and waiting on hold with customer service, and you see why return policies matter to me.

As the holiday shopping season kicks into overdrive, it's more important than ever to be savvy about returns. Unfortunately, as I discovered when researching the policies of leading retailers, returning

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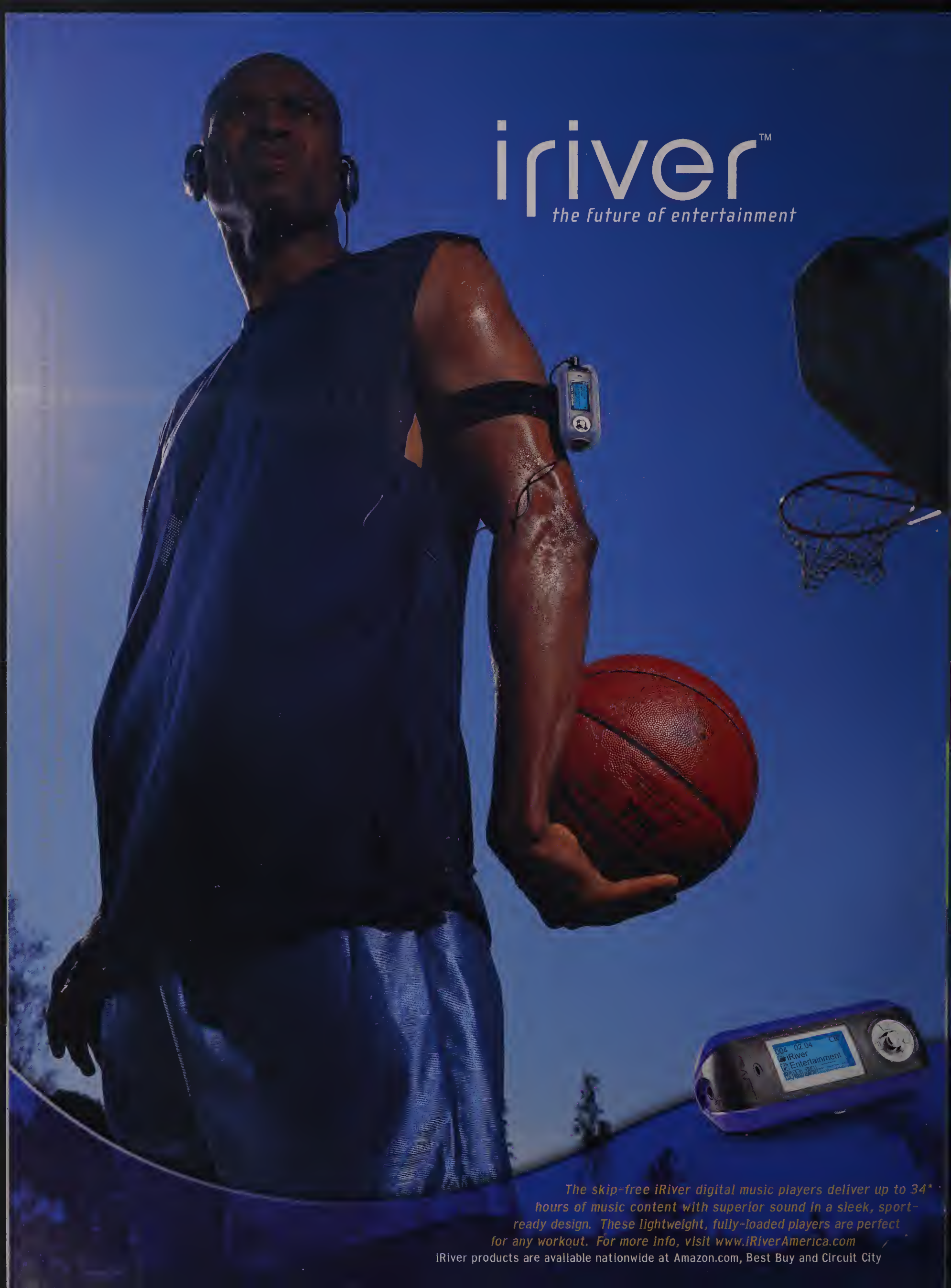
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